

JULY 29, 1997

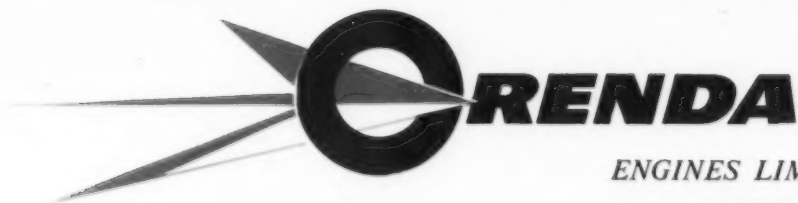
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AMERICAN AVIATION



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The ultimate in rapid, accurate ground-to-air communications, the Wilcox Model 705 provides unmatched reception of signals from CAA Towers, Communication Stations and ATC Centers. The 705 also serves scheduled airlines well in maintaining contact with Operations Departments.

MORE CHANNELS . . . 560 instantly available, remotely selected frequencies; every 50 kc channel from 108.00 thru 135.95 mc. **MONITORING . . .** of omni weather broadcasts and CAA voice communications on one omni frequency with the VOR receiver tuned to another channel. **FASTER, SIMPLER SELECTIVITY . . .** selected channels come in instantly. Spacing is such that adjacent channel rejection is 80 db minimum. **GREAT-ER RANGE . . . GREAT-ER INTELLIGIBILITY . . .** never before such range and freedom from noise and unwanted signals. **SMALLEST, LIGHTEST WEIGHT UNIT AVAILABLE . . .** 3/4 ATR 12 1/2 lbs.

ACCURACY AND STABILITY AT ITS BEST. Model 706 NAVIGATION RECEIVER

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RANGE OF RECEPTION AND PRESENTATION

. . . following types possible: ILS Localizer—tone comparison, including flag alarm. Manual VOR—on cross-pointer meter with manual bearing selector. Full Automatic Instrumentation—on Radio Magnetic Indicator. Voice—on Localizer and VOR stations as well as communications channels. **POSITIVE RECEPTION . . .** 50 kc channel spacing from 108.00 thru 135.95 mc. with selection of 560 individual channels. Every channel clean and clear.

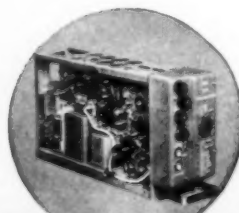
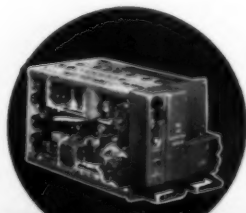
HIGH IN POWER...SMALL IN SIZE AND WEIGHT. Model 707 VHF TRANSMITTER

Imagine a unit that is only 3/4 ATR and weighs only 13 1/2 lbs. that will provide 25 watts minimum power. Here is the ideal transmitter for both commercial and corporate aircraft that gives you:

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FOR COMPLETE DATA ON THESE AND OTHER UNITS OF THE WILCOX CANARI SYSTEM WRITE, WIRE OR PHONE . . .

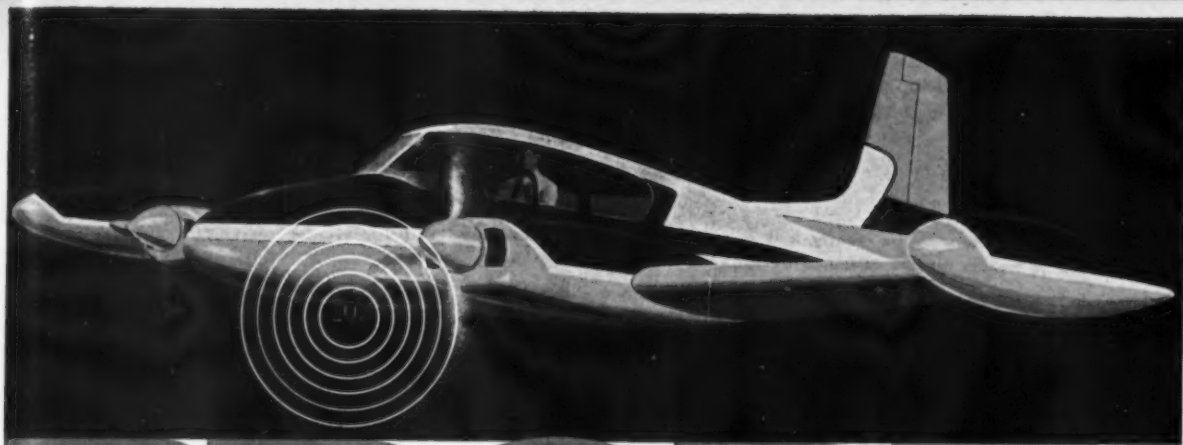


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JULY 29,



PROBE



that
keeps
pilots
out
of
trouble!

NEW AUTOMATIC ICE DETECTOR FOR SMALL AIRCRAFT

UNLIKE commercial airliners, many private and corporate aircraft—while subject to icing dangers—normally operate under conditions which do not warrant the expense of deicing equipment.

Now a new, fully automatic device, weighing only 1.6 lbs. and easily installed, takes these pilots off the spot giving them immediate warning of any icing danger even before it can be spotted by the naked eye!

Proved in Arctic Circle operation,

USAF qualified, and already designated by Lockheed for their new Electra, the Ice Detector consists of a small, exposed "sensing probe" and an electromechanical unit which automatically warns pilots the instant icing conditions are present. Or the Ice Detector may be used to activate the deicing system of an aircraft, making it fully automatic.

A pioneer development of Canadian Applied Research Ltd., of Toronto, Canada—long-time partner of Goodyear in the development of the electro-

thermal Iceguard—the Automatic Ice Detector is now available to operators of American aircraft through the Aviation Products Division of Goodyear. For complete information, write: Goodyear, Aviation Products Division, Akron 16, Ohio.



Iceguard—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

JULY 29, 1957

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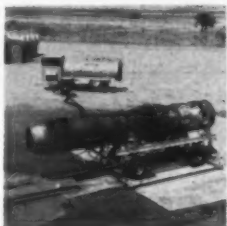
WORLD'S LARGEST AVIATION PUBLISHERS

Two major breakthroughs made B-58 possible
The NACA Area Rule got the Air Force's first supersonic bomber through the sound "barrier," but a new type skin construction—honeycomb sandwich—got it into the higher Mach numbers. For full story see page 30.



Mobile test system for jet engines

Air Logistics Corp. demonstrates its six-component system, which the military and airlines see as possible way to reduce inventory of spare engines and expensive turnaround facilities. Story page 32.



'Far Side' probes for space-flight data

Air Force outer space research gets under way with balloon ascension. Next a balloon will be used to launch exploring rockets from 100,000 feet with a view toward 1,000-mi. altitudes. Page 34.



Cargon outmodes U.S. airfreight systems

New Zealand's SAFE has a 72-mile cargo service that makes airfreight handling in this country look "backwoods," Editor and Publisher Wayne W. Parrish says. For an on-the-spot report see page 47.



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Air Force has started cutting back to stay within its spending ceiling . . . This is going to hurt the industry in many places, but just who will suffer the sharpest cuts still is not clear. North American took the first big blow with loss of its Navaho project, which meant a work-force reduction of 15,600, exclusive of affected suppliers. The procurement puzzle has not been solved, but for a complete report on the situation as viewed by the Pentagon and industry, see Military Editor Henry Simmons' analysis on page 27.



WHEN ACCURACY AND RELIABILITY COUNT MOST!

New Bendix 20-Channel Glide Slope Receiver for Airline and Business Aircraft Features Big Performance in a Little Package

Here's the latest addition to the Bendix* line of ILS Approach Equipment. We call it the GSA-8A Glide Slope Receiver. You'll call it just about the most dependable instrument of its kind. And here's why:

The GSA-8A is all new from circuitry to case. Not just a modification or repackaging of old designs. The result is a tremendously higher degree of course stability, and more accurate, reliable flag alarm information. Weight has been reduced considerably. The receiver weighs 7 $\frac{1}{4}$ lbs. with AC power supply . . . 7 lbs. with transistorized DC power supply.

The complete unit, including either power supply, is housed in a short $\frac{1}{4}$ ATR case. The chassis is mounted

vertically. Tubes and adjustments are on one side, circuit components and wiring on the other. When the case is removed both *wiring* and *tubes* are visible, and access to each is easy for routine maintenance.

For further information write Bendix Radio Division, Aviation Electronic Products, Baltimore 4, Maryland. Or on the West Coast—10500 Magnolia Blvd., N. Hollywood, Calif.; Export—Bendix International Division, 205 E. 42nd Street, New York 17, N.Y.; Canada — Computing Devices of Canada Limited, P.O. Box 508, Ottawa, Ont.

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ENGINEERS: Because of our vast expansion program, several career opportunities are now available in the design and development of commercial aviation electronic products. We invite your inquiry.



GSA-8A Glide Slope Receiver

Bendix Radio Division



A black and white advertisement featuring a hand holding a small mechanical component. The background is a dense field of many similar components. A dashed rectangular box contains text and a map of the Western United States. The map is labeled 'Nutt-Shel' and has several lines radiating from it. The overall theme is industrial design and manufacturing.

out of the
West come

8

**ADVANCED
DESIGNS**

Nutt-Shel


For 15 years



has been

manufacturers.

Today, with

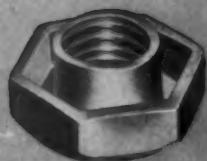
nuts,  is proud to announce

production have increased more

solved one or more fastening

Your inquiry  will receive

understand the unique



solving fastening problems for aircraft

attention focused on lightweight, self locking

that during the last six months, orders and

than 400%. Each design shown here has

problems for a major aircraft manufacturer.

immediate attention by engineers who

characteristics of your problems.

**CHARACTERISTICS OF
NUTT-SHEL'S ADVANCED
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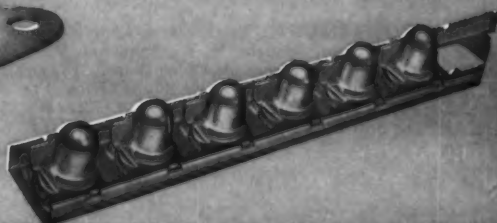
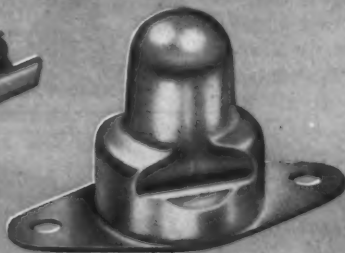
Ruggedness

Smaller envelope

High tensile strength

High temperature

Removable and replaceable



eight advanced designs

created to solve
complex fastening problems

Shown here are eight of the available advanced designs coming from Nutt-Shel. All Nutt-Shel self-locking designs meet applicable functional N A S and government specifications.

Write for complete technical data on these advanced designs. Do you have problems, not covered by these designs? Your inquiry will receive prompt attention.

1. FLOATING SPACER NUT. 13601 & 13602 series

Allows uniform bolt lengths to be used on varying structure thicknesses. Threaded parts replaceable.

Thread sizes 10-32, $\frac{1}{4}$ -28

2. SELF-LOCKING HEX NUT 96 series

Where clearances are restricted, this design permits tightening with an internal wrench. In other applications, it can be tightened as a regular hex nut. 6-32 through $\frac{1}{4}$ -28

3. SLIP-SQUEEZE NUT. 85 Series

Slips on threaded rod and is squeezed tight with pliers.

Thread sizes 8-32 through $\frac{1}{4}$ -16

4. SELF-WRENCHING NUT NS-132 series

Joints can be bolted together without using wrench to hold nut. Reduces installation time.

Thread sizes $\frac{1}{4}$ -28; $\frac{1}{8}$ -24, $\frac{3}{16}$ -24

5. SELF-ALIGNING ANCHOR NUT 13630 series

Joins non-parallel surfaces insuring weight and cost reduction on forgings, extrusions and tapered sheets.

Thread sizes 10-32 through $\frac{1}{4}$ -24.

6. SELF-ALIGNING GANG CHANNEL C1363 series

Combines advantages of gang channel with self aligning features when joining non-parallel surfaces.

Thread sizes $\frac{1}{4}$ -28 and $\frac{1}{8}$ -24.

7. SELF-SEALING DOME NUT

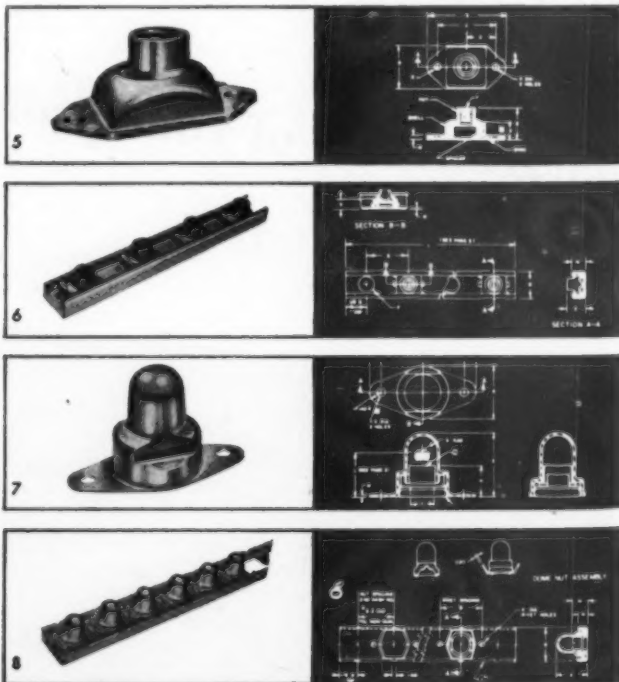
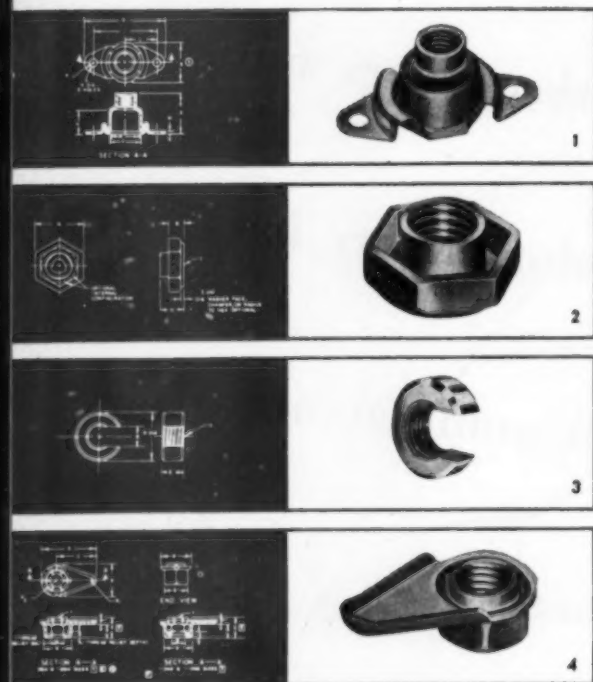
14630H, 14631H and 4630H series
For sealing bolted joints on integral fuel tanks and pressurized portions of airframe.

Thread sizes 6-32 through $\frac{1}{8}$ -20

8. SELF-SEALING GANG CHANNEL

C1463 series
Combines advantages of gang channel with self sealing features.

Thread sizes 10-32, $\frac{1}{4}$ -28



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Those Anti-Alcohol Bills

A VERY SMALL GROUP of people, special pleaders all, are hard at work trying to pressure Congress into legislating against the serving of alcoholic beverages aboard the airlines. There are about seven such bills currently in the legislative hopper.

One such bill actually passed the House last session. The tragedy is that the overwhelming majority of Congress is against such legislation, yet when voting time comes the members cringe under the pressure of special pleaders and the prohibitionists who wish to impose the restrictions of a minority on the majority of the public.

It is unfortunate that a few airlines tended to overdo the liquor serving a few years ago. It is unfortunate, too, that most airlines use something less than sense and grace in handling the liquor problem, preferring double-barreled doses of hard liquor to something more suitable for airplane travel. (One airline actually serves hard liquor on the meal tray, barbarian as that practice may be.) But all these practices can be handled by industry regulation as passenger service matures in a growing business.

It would be a sign of national immaturity if national legislation should condemn for all time the serving or selling of all alcoholic beverages on U.S. airplanes. We think the special pleaders (who have various reasons for their pressures and not all of these reasons could stand the light of day) had best take a new look at themselves in the mirror. There are ways of handling the liquor problem without lobbying, pressuring, wheedling Congress in league with professional prohibitionists. Handling alcohol is largely a matter of growing up—both for industry and the individual. It is not a matter for Congress.

It's Hard to Answer Sandy

A RECENT ISSUE of the Canadian *Flight* magazine carried an article, "What Undefined Border?", by A. F. Sandy MacDonald, of de Havilland Aircraft of our neighboring country to the north. It was amusingly written—but it had a terrific sting.

Maybe you don't know it, but aircraft of American manufacture enter Canada duty-free. But aircraft of Canadian manufacture have to hurdle a 15% tariff barrier to gain admittance to the U.S. "This is an arrangement between the love-smitten neighborly nations which pays off in a really big way for the folks who live on the south side of the line," Sandy says.

The U.S. in 1955 sold \$124.5 million of aircraft and parts to Canada. In the same year Canada sold \$17.5 million to the U.S.

What makes the situation more irksome than

the 15% tariff barrier is the interpretation which U.S. customs gives to assessed valuation of Canadian aircraft and parts coming to the U.S.; in some instances the interpretations have been fantastic, upping the actual tariff barrier to as much as 30%.

Okay, Sandy. It's difficult to argue with you. The U.S. industry should have no fear of a Canadian aircraft invasion if the barriers are let down, so who is to make the first move to bring a little fairness and equality to our "love-smitten neighborly relations?" For too many years our customs barriers have existed as a thorn in the side of the Canadian aviation industry. This should not be.

Why wouldn't it be a good idea for the Aircraft Industries Assn., as an expression of thanks for the big business Canada gives to U.S. aviation, to make a firm move to knock out our unjustifiable tariff barrier?

Vast Improvement

NO PRAISE IS TOO GREAT for the vast change in atmosphere, procedures and attitude of the public health, immigration and customs services at airports of entry in the U.S. To Assistant Secretary of the Treasury David Kendall and Commissioner of Customs Ralph Kelly and all others who have helped re-make the whole system, our applause is deafening. Only a few years ago the system was a disgrace. Today it's something to be proud of.

Not all of the troubles at international airports have been within the power of federal agencies. The facilities are provided locally. One of the worst such facilities has been at Los Angeles International Airport, but a strong editorial by Virgil Pinkley in the *Mirror News* of Los Angeles early last month brought immediate action by the City Council. The combination of local initiative, plus the new attitude of the federal agencies involved, is producing results.

Where's the Show?

THERE WON'T be a national air show this year and the Air Foundation which has sponsored such shows with major military participation in the past has been awfully quiet.

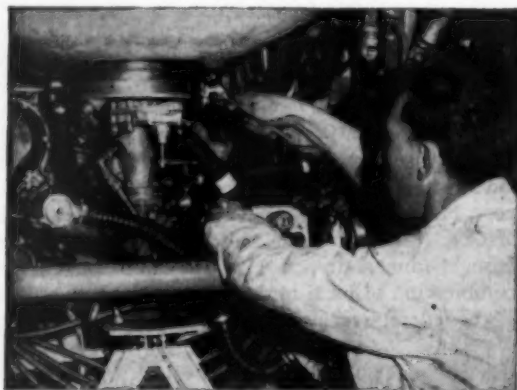
We hope that Fred Crawford, the president, and Ben Franklin, the general manager, will come up before long with a plan to sponsor a civilian trade display and show, something that will bring buyers, sellers and public together to see, inspect and fly every type of civil airplane available. We still think the business and private aircraft market is the best thing on the horizon and that a show of new and converted aircraft in a different locale each year would be much in order.

Wayne W. Parrish



Servicing an airliner at Canadian Pacific Airlines' huge Vancouver, B.C. maintenance base.

MARMAN V-Band Couplings Speed Engine Maintenance on Canadian Pacific Airliners



This Canadian Pacific engine mechanic is securing the sump assembly to the oil tank by tightening the Quick-Coupler latch on a Marman V-Band Coupling.

Like many airlines today Canadian Pacific Airlines has extensive overhaul facilities where efficient engine and airframe maintenance minimizes aircraft "hangar time".

Contributing to faster, easier engine overhaul are Marman V-Band Couplings. They fasten engine components and seal lines securely, yet permit quick connection and disconnection for service and inspection.

Get full information on how Marman V-Band Couplings simplify aircraft fastening and joining problems. Write for Marman Catalog No. 40. For special applications, contact your local Marman Field Engineer.



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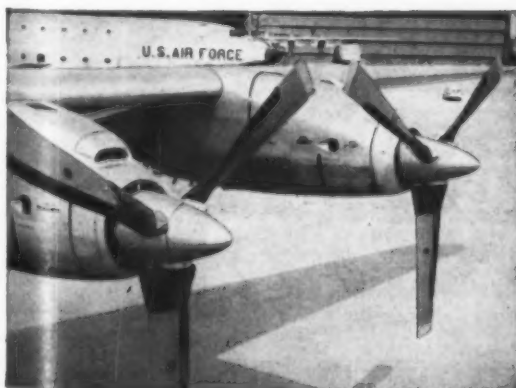
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**propellers with the brains
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Converting the power of the new gas turbine or "turboprop" aircraft engines into useful thrust is a most exacting assignment for the time-honored propeller. It has to handle just about double any previous power . . . smooth out fast accelerations characteristic of these engines . . . control their power by the subtlest amount of pitch change on the blades . . . reverse to slow down and stop the momentum of some hundred tons of airplane.

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LETTERS

Exception noted

To the Editor:

On your Sidelights page in the July 1 issue of *AMERICAN AVIATION*, you wondered why no airline had separate phone numbers for flight information.

United Air Lines in December 1952 started using special phone numbers in four major cities to call for flight information. No reservations were booked

on these lines; only flight information was given out.

Today this service is available to United passengers in Chicago, Cleveland, Denver, Los Angeles, New York and San Francisco.

For many years United featured these numbers in a prominent spot in their timetables. They are now shown in the back of the timetable with regular phone numbers, as most Mainliner pas-

sengers have become familiar with this service. These numbers are also listed in city phone books. *H. E. POHLMAN, 2217 So. Marion, Denver 10, Colorado.*

Attention cargo carriers!

To the Editor:

One of our major products is a base station antenna for the communications services . . .

Now these antennas are constructed in the form of a long cylinder and are crated for shipment in wood crates 6" by 8" by 16 ft. long. Shipping weight runs about 100 lbs. depending upon accessories. From time to time I have read in your publication about the advances being made in the field of air cargo transportation and yet our experience shows a steadily deteriorating trend so far as air shipment of our products is concerned. Because of the nature of our products there is always a certain percentage of rush or emergency shipments involved in our work . . .

We find that although the air cargo carriers advertise extensively and are capable of handling items like our easily stymied when it comes to handling the ground transportation of the crate from our plant to the airport. It seems that for some reason they are stuck with trucks that will take lengths up to about 12 feet but no longer and come what may they just can't accommodate us for ground transport. This is surely ridiculous in this age of rapid air hauling, and especially in the Chicago area.

Most of the time I am able to beg the air cargo dispatcher into arranging for the truck pickup somehow. However, this last week I was told definitely by the manager of one of the larger exclusive air cargo carriers that they would not handle these antennas for us . . . this occurred at the same time that their salesman was calling on us for business. As you well know, if the ground pickup fails to materialize at our plant when the item is ready then we are forced to ship via air merely to overcome the delay already involved, although we are probably better off to schedule via truck in the first place.

I have been told by air cargo people as well as standard intercity truckers that our products are very desirable from a freight standpoint in that they stack well and people are not only losing a good revenue item in hauling but in addition are doing great harm to their advertising policy when they fail to provide for proper ground handling from shipper to the airport. *E. F. HARRIS, Mark Products Co., Morton Grove, Ill.*

Compliments

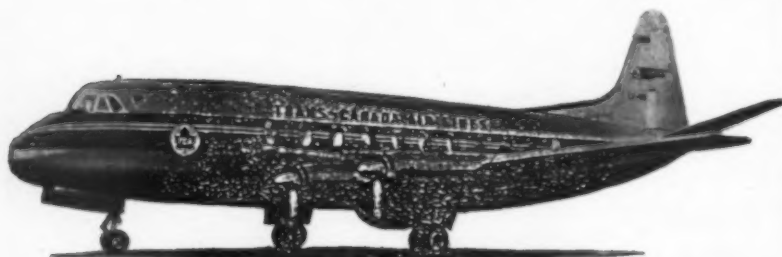
To the Editor:

. . . I should appreciate your permission to reproduce the article entitled "Doppler release is good news for airlines" in the July 1 issue of *AMERICAN AVIATION* (page 50). . . *WILLIAM I. CARNES, chairman, Airlines Electronic Engineering Committee, Aeronautical Radio, Inc., Washington, D. C.*

To the Editor:

Just a note to congratulate you on the excellent editorial relative to Bureau Counsel's decision and exhibits in connection with our request for a fare increase (*AMERICAN AVIATION*, July 1, p. 9). *CHARLES H. MURCHISON, Chairman, Executive Committee, Board of Directors, Capital Airlines.*

PASSENGER COMFORT ASSURES REPEAT TRAFFIC



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The Viscount, introduced to America by Trans-Canada Air Lines, has produced a revolution in flight comfort.

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Your passengers should have the best in seating and Aerotherm offers the finest in aircraft seats, designed for safety, comfort, utility and styled to match the ultimate in modern plane interiors. Why not contact our Project Engineers, The Thermix Corporation.

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WHEN-WHERE

JULY

National Flying Club Convention, sponsored by National Flying Club Assn., Inc., Denver, July 30-Aug. 2.
Air Force Assn., Conventiin, Washington, D.C., July 30-Aug. 4.

AUGUST

IAS Naval Aviation Meeting, U.S. Grant Hotel, San Diego, Aug. 6-10.
International Ignition Conference, sponsored by Bendix Scintilla Div., Sidney, N.Y., Aug. 20-22.
Western Electronic Show and Convention, Cow Palace, San Francisco, Aug. 20-23.
National Flying Farmers Assn., annual convention, Municipal Airport, Wichita, Aug. 25-29.
Experimental Aircraft Assn., annual Fly-in and convention, Curtiss-Wright Airport, Milwaukee, Aug. 30-Sept. 1.

SEPTEMBER

Royal Aeronautical Society and IAS 6th International Aeronautical Conference, Folkstone & London, Sept. 1-15.
SBAC annual air show, Farnborough, England, Sept. 2-8.
Aircraft Div. of the American Society for Quality Control, annual conference, Mark Hopkins Hotel, San Francisco, Sept. 9-10.
IATA annual general meeting, Madrid, Sept. 9-14.
ASME fall meeting, Hotel Statler, Hartford, Conn., Sept. 23-25.
SAE Aeronautic meeting, Aircraft Production forum and Aircraft Engineering Display, Ambassador Hotel, Los Angeles, Sept. 30-Oct. 5.

OCTOBER

National Airports Conference, University of Oklahoma, Norman, Okla., Oct. 2-4.
National Business Aircraft Assn., 10th meeting and forum, Denver, Oct. 2-4.
International Northwest Aviation Council, annual convention, Palliser Hotel, Calgary, Canada, Oct. 6-8.
National Electronics Conference and Forum on electrical research, development and application, Chicago, Oct. 7-9.
Triennial Inspection of the NACA Lewis Propulsion Lab., Cleveland, Oct. 7-10.
Annual Airport Development and Operations Conference sponsored by N. Y. State Bureau of Aviation, Onondaga Hotel, Syracuse, Oct. 8.
International Union of Aviation Insurers, annual general meeting, Amsterdam, Holland, Oct. 8-11.
Society for Experimental Stress Analysis, national fall convention, El Cortez Hotel, San Diego, Oct. 9-11.
National Noise Abatement Symposium, sponsored by Armour Research Foundation, Sherman Hotel, Chicago, Oct. 10-11.
National Assn. of State Aviation Officials, annual meeting, Sun Valley, Ida., Oct. 16-18.
Canadian IRE, Convention-Exposition, Automotive Bldg., Exhibition Park, Toronto, Canada, Oct. 16-18.
American Helicopter Society, annual west-ert forum, Statler Hotel, St. Louis, Oct. 20-22.
Canadian Aeronautic Institute, IAS meeting, Montreal, Oct. 21-22.



FROM AN ORIGINAL PAINTING FOR CECO BY R. T. HANDVILLE*

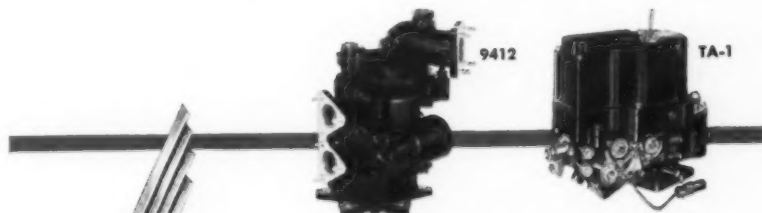
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Northrop's Snark SM-62, a surface-to-surface missile, is powered by a Pratt & Whitney Aircraft J-57 turbojet with *main fuel pump* engineered and built by Chandler-Evans.

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* * *

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CONVAIR A DIVISION OF GENERAL DYNAMICS CORPORATION

AIRTRENDS

Now it can be told: within the past two months Lockheed Aircraft Corp. came close to acquiring the Martin Company. Deal fell through when the two boards of directors rejected each other's proposal and counter-proposal. Officers of both companies were disappointed. They favored the merger.

Top USAF officials aren't altogether certain that the Pentagon high command will carry out its plan to restrict fiscal 1958 military spending to \$38 billion. "When they see what we'll have to chop out to make that ceiling, I don't think they'll go through with it," comments one USAF official.

It is clear that some drastic program changes will be necessary if USAF is to stay within its \$17.4 billion total spending forecast for fiscal 1958. Same applies to Army and Navy (see page 27). Although reduction will amount to only about 5% of total projected military expenditures, the fiscal facts of life are such that the bulk of the cut will have to be absorbed by one type of hardware program: the one slated for buildup in fiscal 1958.

Several critical USAF programs fall in this category. They include the Republic F-105 fighter-bomber, Convair F-106 interceptor, Northrop Snark missile, McDonnell F-101B interceptor, Boeing Bomarc interceptor missile, and the Bell Rascal air-to-surface missile.

Other Army and Navy programs also fall in this category. Altogether, they add up to a price that the Administration may feel is too great to assure a general tax cut next year.

Same considerations which impelled USAF to cancel the Navaho ramjet intercontinental missile will probably lead the Navy to abandon its ramjet Triton. Though the missile promises fantastic accuracy, it is being mouse-trapped by the supersonic Regulus II on one side and the Polaris ballistic missile on the other.

Irrked House-Senate conferees charging they had been undercut by the Administration on the fiscal 1958 defense appropriations bill, knocked out most of a \$380 million Senate increase for USAF-Navy aircraft procurement. Action is being regarded as a slap at the Administration.

Reason for the ire: Senate military boosters entered the conference prepared to fight for restoration of nearly \$1 billion that military leaders said they must have in fiscal 1958. Almost before they could present their case to skeptical House colleagues, the Administration issued a surprise statement saying it could get along on less than the amount restored to the bill by the Senate.

Faced with this and disclosure of a Budget Bureau letter exhorting agencies to keep spending to fiscal 1957 levels, Senate conferees saw little choice but to go along with House economizers.

Conferees left standing \$40 million of the Senate increase for USAF aircraft and related procurement, bringing total to \$5,886,000,000. Navy was granted \$25 million over House-approved figures, or \$1,837,000,000. Of the total \$33,759,850,000 defense budget, \$15,930,220,000 is earmarked to run the USAF in fiscal 1958.

A refreshing element of candor was injected into military security efforts this month by Defense Secretary Charles Wilson. In accepting the Coolidge Committee's remaining recommendations on safeguarding classified information, Wilson ordered military officials to quit fruitless attempts to classify new weapon systems that are in plain public view. He also took a reasonable stand on alleged leaks by contractors, calling for more efforts to educate them on safeguarding classified information, but no new regulations.

DIGEST

Higher profits for manufacturers could save government 'millions', Hurley tells Hebert committee

Higher allowable aircraft profits could, in the long run, save the government "millions of dollars" and speed up vital deliveries, Curtiss-Wright president Roy T. Hurley told congressional probes.

C-W officials, led by Hurley, and armed with statistical data on the "feast or famine" nature of the aircraft business, testified before the Hebert Investigations Subcommittee.

The House unit, which convened to study engine profits and costs, suddenly veered to weigh charges that the switch of an engine overhaul contract from General Electric to Curtiss-Wright stuck the taxpayers with a \$25 million tab.

Hurley, however, managed to get on record his belief that a higher profit margin was, at least, a partial answer to industry problems. In response to questioning, the C-W president volunteered his services as a government consultant to show how this would work.

As the probe opened, Hurley handed two other recommendations to the subcommittee. He urged:

More freedom for procurement officers in handling appropriation

funds, provided they are held accountable for the end result.

Steps toward allowing contractors to provide their own facilities and recognize the cost of such facilities in the price of the product.

Hurley tied his proposal for government savings to a cost reduction program. "The American taxpayer should not be encouraged to expect a tax reduction by a reduction in profits on military contracts," he said.

"For Curtiss-Wright, such profits average about 3 3/4 % of sales. Substantial savings can be made, however, by reducing the cost of product sold. For Curtiss-Wright this cost averages about 96 1/4 % of the price of the engine.

"A 5 % reduction in this amount would be a greater saving for the taxpayer than completely eliminating all profits on military business."

Hurley added: "The feast or famine scheduling and a 3 3/4 % profit after taxes does not permit an engine manufacturer to develop the engines and accumulate the facilities necessary to meet the Government's requirements and accomplish the desired cost reduction."

Hurley revealed that more than

65% of the company's earnings is now being derived from non-defense business. C-W, he testified, had not been satisfied with defense business mainly because of encumbering procurement rules.

The subcommittee simultaneously released a fat statistical volume chronicling activities of the engine industry since 1952.

In the period between 1952 and 1956, the Wright Aeronautical Division got government contracts for engines, research and development and spares totaling \$2,157,122,972. The 500-page report revealed that net worth of the corporation and its subsidiaries rose from \$120,620,532 to \$183,336,612 in the same years. Cash dividends of \$54,874,135 were paid out.

The C-W head, accompanied by company v.p. Nicholas Dykstra and others, said the aircraft firm had sunk \$35,000,000 of its own funds to aid the financially ailing Studebaker-Packard Corp. This, according to Hurley, had spared 30,000 jobs and 3000 small businesses.

Ohio Republican William E. Hess, however, saw it another way. He charged that a shift of an engine overhaul contract for J47s from General Electric, Evendale, O., to Curtiss-Wright's Utica-Bend facilities forced layoffs in his own region.

Chairman F. Edward Hebert dumped fuel on the fire with a charge that the transfer of the \$3,000,000 contract cost the taxpayers \$25,000,000.

Implication was hurled that Curtiss-Wright may have agreed to "bail out" Studebaker-Packard in exchange for defense contracts. Hebert further asserted that the Air Force, which opposed the shift, had been "coerced" into action.

Hurley promptly termed the figures "ridiculous." Work, he testified, will probably cost less than \$5 million, including the \$1,300,000 the Government provided for tooling up. Under the redeterminable contract, final cost may be even less, he said.

The Curtiss-Wright contract with Studebaker-Packard was negotiated last August and okayed by stockholders in October. Under terms of the deal, Studebaker-Packard was to remain an independent entity while receiving management assistance from the aircraft firm. Curtiss-Wright took long-term leases on two Studebaker-Packard plants and placed defense contracts at the leased facilities.

C-W officials made no detailed reply to the Hebert allegations. They did, however, say they planned a study of the entire contract and they may testify later. Air Force officials are also expected to testify.

In a separate and unallied move, the subcommittee heard charges from the General Accounting Office that the General Motors Corp. picked up excess profits of \$17,459,200 on a contract for 599 F-84F aircraft.

Core of the allegation was GAO's

North American revamps utility jet layout



ARTIST'S DRAWING shows design changes North American Aviation is making in its 500-mph jet utility aircraft (AMERICAN AVIATION, July 1, p. 22). Engine nacelles at wing roots have been eliminated and engine pods moved to aft fuselage just behind and above 30-degree swept wing. Aspect ratio is being reduced. To be powered by two General Electric J85 turbojets, Sabre Liner will be capable of flying halfway across country without refueling, North American says.

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claim the big manufacturing firm over-estimated costs as much as \$8 million in negotiating with procurement officers. GAO specifically accused GM of failing to report "known reductions" of \$1,700,000 in subcontractors' prices during redetermination.

The government agency fastened part of the blame on green procurement officers, but it contended GM declined to turn over a refund when the Air Force asked for it.

Hearings on the aircraft engine query were due to resume this week.

Capital Airlines elects Gen. Baker president

In a major management change, Maj. Gen. David H. Baker has been elected president and chief executive officer of Capital Airlines, effective Aug. 1.



Maj. Gen. Baker

He succeeds J. H. "Slim" Carmichael, president for the past 10 years, who was elected chairman of the board. Carmichael replaces George R. Hann, who in turn succeeds Charles H. Murchison as chairman of the executive committee. Murchison remains as general counsel and a director.

Gen. Baker, who gained prominence recently with his warnings that the aircraft industry could expect a sharp drop in USAF business as a result of the transition from manned aircraft to guided missiles, retires July 31 as director of procurement and production of Air Materiel Command. Baker, 49, is a graduate of West Point and Harvard Business School.

Baker joins Capital at a time when the company is beset with financial difficulties. The airline, now operating 59 turboprop Viscounts, had a first-quarter loss of \$1,870,171. Carmichael, describing the current situation as "critical," said last month that the 1957 loss would be \$2,575,000. In May, the company postponed indefinitely its planned acquisition of 14 Comet jet transports and 15 more Viscounts.

Boeing 717 to cost between \$3.5-\$3.75 million

Price tag on the Boeing 717 medium-long range jet transport is reported to be in the \$3.5-\$3.75-million range and the company sees a market potential of at least 200 planes in the 1960-65 delivery period. (See story, p. 46.)

Ralph L. Bell, director of sales for Boeing's Transport Division, also said that Boeing will have sold at least 200 planes in its 707 Jet Stratoliner and Intercontinental series by the time the first models enter service in 1959.

Three airlines are reportedly keenly interested in the new Boeing—Pan American, for its Latin American Division; United and Western,

Military aircraft must observe CAA traffic rules in airways west of Phoenix, CAB directs

Civil Aeronautics Board has directed that military aircraft shall comply with all air traffic rules prescribed in Part 60 of Civil Air Regulations and observe all air traffic rules administered by Civil Aeronautics Administration in the area just west of Phoenix, Ariz.

The directive upholds the CAA in a "conflict" in the use of airspace over Green Civil Airway No. 5 and Victor Civil Airway No. 16 by specifically preventing the military from exercising its authority to deviate from specified air traffic rules.

Because CAB found that an emergency situation existed in the area, the regulation was effective immediately (July 12) although interested persons have until September 16 to submit written data containing their views on the matter.

The CAB acted after being advised that "a grave safety hazard" existed in the airspace west of Phoenix where the two airways are intersected by a segment through which considerable traffic from Luke Air Force Base moves. The

Luke flights are in jets, mostly trainers on student missions including gunnery flights.

The Board said that efforts to resolve the situation on a voluntary basis were unsatisfactory. Civil users of the airways contended that in order to make operationally feasible let-downs and climb-outs to and from Phoenix airports they should not be required to fly above 4,000 ft. mean sea level in the airspace in question.

Military authorities contended that trial operations have been conducted in which the military aircraft crossed the airways at 3,000 ft. and that such operations proved highly dangerous. Moreover, the military contended, severe turbulence at low altitude in the area presented a particular hazard to student pilots.

CAB executes rules for all U.S. air traffic, including civil, public, military and foreign aircraft. Accordingly, the directive to the military was made in the form of a Special Civil Air Regulation (SR-421).

Fairchild gets \$12-million contract for Army drones

Fairchild Engine & Airplane Corp. has received a \$12-million contract for research, development and manufacture of a quantity of high-speed surveillance drones for the Army Signal Corps.

Army has specified a lightweight, short-range drone utilizing a long-duration solid-propellant rocket motor. The drone is reported to be capable of taking photographs on short hops over enemy positions. A net is used to pick the drone out of the air upon its return. Structure is largely Fiberglas.

Fairchild Aircraft Division will handle the manufacturing.

New fuel reported useful for starting stalled jets

A new fuel believed useful for starting stalled jet engines at altitude has successfully completed simulated flight tests at the Aircraft Engine Laboratory of the Naval Bureau of Aeronautics, according to the Wright Aeronautical Div. of the Curtiss-Wright Corp., Wood-Ridge, N. J.

Generically called "pyrophoric fuels" because of their spontaneous ignition upon contact with air, they include the C-W formulation which is a mixture of aluminum trimethyl (ATM) and aluminum triethyl (ATE). Available energy is about 19,000 BTU/lb.

The company reports that reliable spontaneous ignition has been demonstrated at temperatures from -40°F to 400°F. Increased moisture or humidity is said to be an advantage.

Once jet engine combustion is

started, it continues without the aid of the igniting device. According to C-W, test results reveal that less than one cubic inch of the ATM-ATE mixture injected into the combustion chamber of a turbojet will provide consistent and reliable ignition at starting conditions at altitudes up to 120,000 feet.

The fuel is used only to provide a flame for starting and does not supplant the normal fuel supply of the engine.

F8U-1 shaves 23 minutes off transcontinental mark

A Navy Chance Vought F8U-1 Crusader piloted by Marine Maj. John Glenn, Jr., set a coast-to-coast record when it flew from Los Alamitos NAS, near Los Angeles, to Floyd Bennett NAS, N. Y. in 3 hrs. 23 min., averaging a little more than 726 mph over the 2,460-mi. route.

The Crusader was refueled three times during the record hop by North American AJ aerial tankers. Previous mark was 3 hrs., 45 min. set by a Republic F-84F in 1955.

Onassis interests buy two DC-8s, option third

Ionian Ltd. has ordered two Douglas DC-8 jets with an option for a third on behalf of the A. A. Onassis interests, which control Olympic Airways.

The planes will be used on Olympic's international routes beginning in 1960 and will cost a total of \$12 million. Fourteen airlines have placed orders for the Douglas jets and firm orders total 123.

BRIEFS

Manufacturing-military

Justice Department has settled for \$1,070,289 a suit filed in the U.S. Court of Claims by Kaiser Aircraft and Electronics Corp. and Willys Motors, Inc., to recover a total of \$1,595,289 as an outgrowth of the companies' work on C-119 and C-123 transports under cost-plus-fixed-fee US-AF contracts.

Brig. Gen. Vincent J. Meloy, USAF (ret.) has become special assistant (military liaison) to the president of United Aircraft Service Corp., and has transferred from New York to St. Petersburg, Fla.

Lt. Col. Carlo R. Tosti, former assistant executive officer of the USAF Air Research & Development Command, has been named Director of Information Services for ARDC. He replaces Col. Albert A. Arnheim, who has been assigned special assistant to Gen. Thomas Power Strategic Air Command chief. Maj. Kenneth E. Grine has been named Chief of ARDC Public Information Division.

Hardman Tool and Engineering Co. has received a contract from Boeing to manufacture passenger seats for the 707.

Fred Neely, pioneer aviation writer and former public relations manager for Bell Aircraft, died at Alexandria, Va., last week after a long illness. He had been a feature writer for *Colliers* and the *Washington (D.C.) Star*, and previously was with Al Williams at Gulf Oil and the Bureau of Air Commerce.

Hunter-Douglas Div. of Bridgeport Brass Co. has received a Navy contract for \$2 million for pilot production of aluminum rocket motor tubes for the Zuni rocket.

Curtiss-Wright Corp. has purchased 150 sq. mi. for a missile and atomic test site near Reno, Nev. Company will acquire another 150 sq. mi. to increase total to 300 sq. mi.

Specialized Propulsion and Control Equipment Corp. (SPACE) has been formed and has purchased the manufacturing operations of Shaw & Estes of Garland, Tex.

Transport

Slick Airways has established an aircraft sales division to buy and sell commercial aircraft to domestic and foreign airlines. Kenneth T. MacKenzie, who has been with Slick since December 1945, will head the division.

A week-long celebration, starting October 20, will mark completion of the \$25-million Love Field, Dallas, expansion and modernization program.

All 3,337,036 shares of the recent stock offering by Trans World Airlines were purchased at the offering price of \$13 per share for total proceeds of \$43,381,468. Of shares offered to holders other than Hughes Tool Co., 644,977 shares, or 75% were subscribed. The remainder was subscribed by Hughes Tool Co.

Western Air Lines has started daily roundtrip nonstops "Champagne Flights" between Los Angeles and Mexico City. Time for the 1,555-mile route is about five hours 45 minutes.

Scandinavian Airlines System has ordered \$250,000 worth of Radio Corp. of America AVQ-10 radar systems for DC-7Cs. Equipment will be used for polar navigation and weather warning. Systems will also be used on SAS's six Caravelles.

First C-46 modified to Riddle Airlines T-category version has been licensed by CAA and will go into service shortly. Since type certificate was issued by CAA in March, 44 conversions have been scheduled, including Riddle's fleet of 32.

Barak Thomas Mattingly, 56, chairman of the board and general counsel of Ozark Air Lines, died of a heart attack on July 18 in St. Louis.

Compania Mexicana de Aviacion, S. A. has been recommended by CAB Chief Examiner Francis W. Brown for two routes designated in the provisional

air agreement between the U.S. and Mexico. Routes are: Mexico City and Chicago via intermediate points in Mexico; Mexico City and San Antonio via intermediate points in Mexico.

FINANCIAL

Beech Aircraft Corp. had \$2,478,019 net on \$75,690,095 sales in the first nine months (to June 30) of its fiscal year. Sales for same period a year ago were \$56.1 million. Backlog on June 30 exceeded \$112 million.

Douglas Aircraft Co., Inc., realized record peacetime sales and earnings during the six months ended May 31. Net income during the period was \$17,994,289, up from \$12,820,637 the year before. Earnings per share were \$4.86, compared to \$3.46 a year ago; sales were \$565,579,997, compared to 1956's \$453,076,740.

The Flying Tiger Line reports gross revenues for May and June totaling \$6,094,444, a 79% increase over the same months in 1956. May revenues were \$2,899,866, compared with \$1,666,955 last year, and June's business was \$3,194,578 up from \$1,730,132.

Piper Aircraft Corp. reports \$2,420,026 net income for the first nine months of the fiscal year ending Sept. 30, compared with \$1,815,933 net in the same 1956 period. Sales were \$21,523,508, up from \$18,981,663.

Coleman Engineering Co. reports \$118,136 net on \$3,808,877 gross income for fiscal year ended Apr. 30, against \$99,433 net on \$3,680,176 gross in preceding year.

Pacific Airmotive Corp.'s net profit for six months ended May 31 was \$443,548, compared with \$361,285 in same 1956 period. Sales were \$16,716,361 against \$9,550,483.

ACF Industries and consolidated subsidiaries had \$9,818,000 net after taxes on \$294,592,000 revenues in fiscal year ended last Apr. 30. Previous year's profit was \$8,593,000 on \$245 million revenue.

Temco Aircraft Corp. has appealed to the Tax Court of the United States, a Renegotiation Board ruling that it must return \$1,003,790 in alleged excess profits for 1953.

Securities and Exchange Commission has issued an order exempting from provisions of the Investment Company Act the proposed transactions between American Research & Development Corp. and Airborne Instruments Laboratory, Inc., involving purchase by American Research of not to exceed \$130,000 principal amount of the convertible notes of Airborne at 100% of principal amount.

Colonial Aircraft Corp., has filed with Securities and Exchange Commission a registration statement covering 248,132 shares of its 10¢ par common stock on which warrants are expected to be exercised by Glick & Co. Morris J. Laurie and Andrew Krivy.

First turbo-copter in production



NAVY'S SIKORSKY HSS is first turbine-powered helicopter in production. Copter is powered by two GE T58s, each rated in excess of 1,000 shp. Sikorsky lists these advantages of turbine power: noise and vibration reduction, greater payload and distance capabilities, less component wear, Note T58 intakes on nose.

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Air India International,
British Overseas Airways Corporation
and Deutsche Lufthansa
and the Vickers VC 10s ordered by
British Overseas Airways Corporation.*

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SPOTLIGHT

Production version of the Convair Hustler will be the B-58A (designation of the first four aircraft delivered to USAF). A -B version is unlikely because the design is frozen and there will be no major variations of the configuration, which already incorporates recon capability.

Latest concept in the growing list of new missile developments is an air-to-surface weapon that homes on enemy radar.

As far back as 1953 an Air Force B-29 relying solely on inertial guidance flew from the East Coast to Los Angeles and came within 10 miles of Los Angeles International Airport, Arthur D. Little's June *Industrial Bulletin* reports.

Although its takeoff weight is about 40,000 pounds less than the Boeing B-47 medium bomber, the Convair B-58 carries only the classification of supersonic bomber and is not categorized as light, medium or heavy.

Air Force has asked Defense Dept. permission to race the McDonnell F-101A in the Thompson Trophy event this fall. USAF is confident the 1,100-mph F-101 can beat Navy's record of 1,015 mph with the Chance Vought F8U last year. AF also would like to try for a truly supersonic (760 mph or better) transcontinental flight with the McDonnell interceptor using the buddy refueling system.

The three-quarter-inch thick sandwich construction used in the Convair B-58 wing has excellent properties as an insulation agent preventing excessive fuel boil-off during long supersonic cruise missions.

As a result of the Navaho cancellation, North American has no application for the three-barrel, 400,000-pound-thrust booster rocket engine developed for the production version of the intercontinental missile. It may propose the powerplant as the first-stage of a souped-up Titan in place of the 300,000-pound Aerojet-General powerplant now under development.

Future of Navy's program for new "carrier on deck" transport is hazy. Although navy officials at operating level are actively pursuing project and support program for new aircraft, scarcity of funds may rule out its development for some time. For the present, Grumman holds inside track with continued navy use of its TF-1 Trader for cod operating mission.

Fairchild Engine & Airplane Corp. has ordered a complete revision of the mockup of the M-185 executive transport as a result of new windtunnel data. Company says it is giving full support to the four-jet, eight-passenger aircraft, despite the job of developing the Turboboxcar and producing the F-27 Friendship transport.

Second of the two Lockheed XF-104s built was lost this month when it developed trouble on a test flight. Both XF-104s were powered by Curtiss-Wright J65s. Production versions have the GE J79. Pilot William C. Park, Jr., bailed out of the fighter at 12,000 feet and was unharmed.

A \$950,000 price-tag has been placed on Grumman's twin-turbo-prop executive transport. Company has selected three distributors but announcement will not be made immediately.

Bell Aircraft is developing a Rascal-type missile for the Convair B-58. Air-to-ground missile would replace pod on supersonic bomber for certain types of missions.

General Electric's J79 variable stator engine is capable of getting large aircraft into the regimes of Mach 3 speeds, whenever the planes themselves are capable.

Relatively low-melting point aluminum is getting a shot in the arm from Alcoa, which claims that some of its powder metallurgy products now available commercially can survive in temperatures up to 900°F. These products can be had in standard mill or fabricated forms such as extrusions, forgings, sheet and tube.

CAPABILITIES . . . Manpower, Tools and Experience



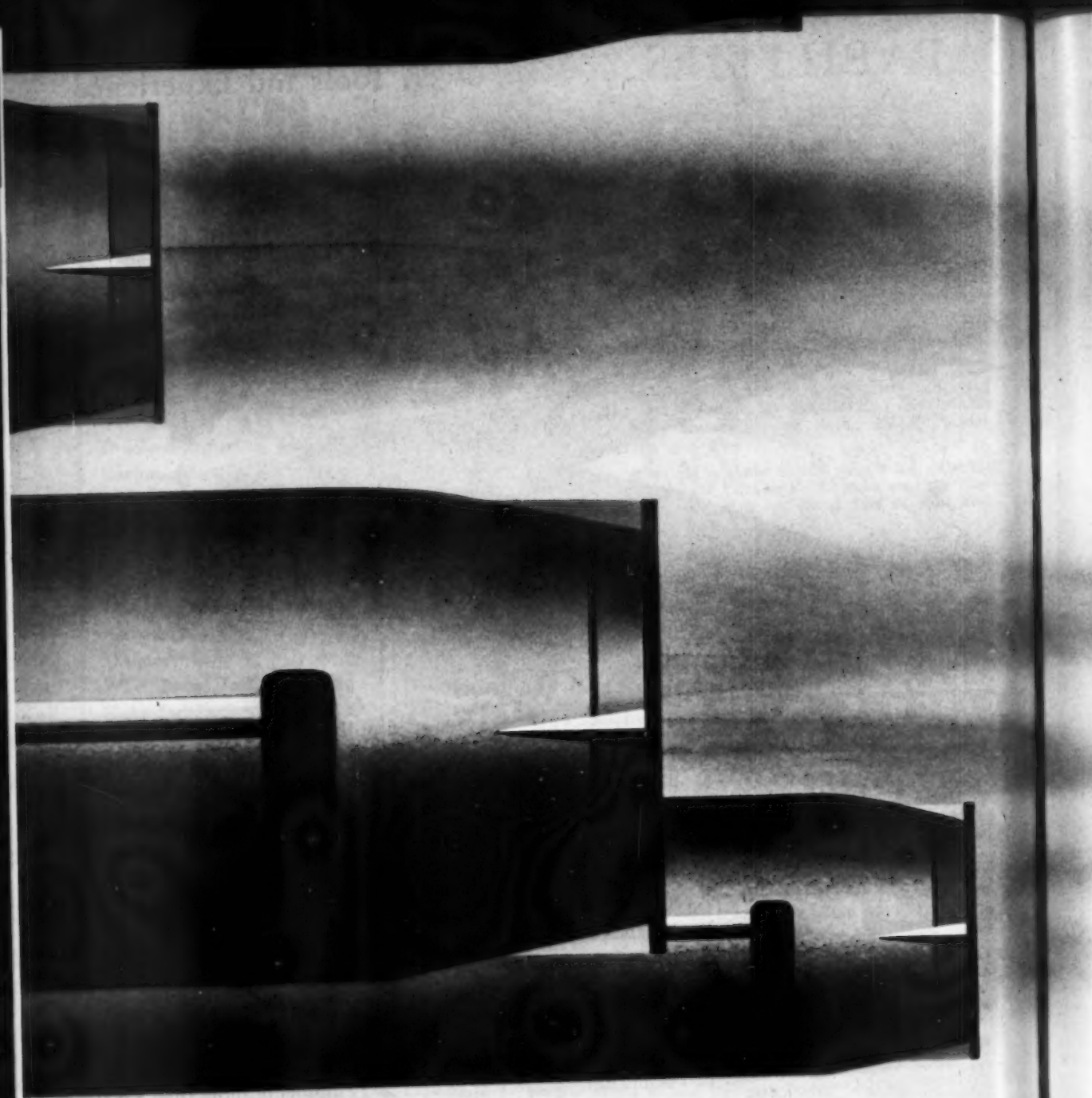
BEECH BUILDS	
	MA-3 MULTI-PURPOSE VEHICLES
	C-26, MD-3 POWER UNITS
	TANK-WING-MAJOR SUBASSEMBLY SUBCONTRACT PRODUCTION
	BEECHCRAFT T-34 TRAINERS
	BEECHCRAFT L-23 TRANSPORTS
	4-PLACE BEECHCRAFT BONANZA
	6-PLACE BEECHCRAFT TWIN-BONANZA
	8-PLACE BEECHCRAFT SUPER 18

THE U. S. ARMY L-23, rugged military version of the famous Beechcraft Twin-Bonanza, was the first twin-engine airplane used by the Army Field Forces. Since entering Army service over five years ago, the L-23 has compiled an outstanding record in providing dependable service in all kinds of climate over all types of terrain. On the battle fields of Korea or the training fields at home, the L-23 has met the most exacting demands for versatility, ease of maintenance and high standards of performance with highest honors. Its record has brought new orders from the Army Aviation Division.

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B.F. Goodrich wheels and brakes selected by Lockheed for propjet Electra



EXCEPTIONAL requirements had to be met in choosing a brake for Lockheed's new Electra, America's first propjet airliner. The Electra introduced a new concept of intermissions—in flight and during landings. It will operate economically with minimum oil-time for maintenance. And, in emergency flight, it will be able to land safely on existing runways.

Disc brake type that would operate with maximum efficiency, give long service and handle the higher kinetic energies generated by faster, heavier stops. For these and many other reasons, Lockheed selected the new B. F. Goodrich disc-type brake.

B. F. Goodrich engineered the new brake-wheel assembly, standard metal housing and lower "backing" wheel design. Tests showed Lockheed the unit has great strength with minimum weight and the highest maintenance of smooth stopping ability and long wear.

Here were very particular adjustment minimum constant long clearance regardless of service use. This gave the pilot better ground control because the brake stops must be made way to yield pressure. By eliminating periods, adjustment, maintenance time is reduced.

The photos show one of these disc-type brakes was made in complete performance of new B. F. Goodrich brakes with disc of standard disc type. These two standard landings of the Electra at starting speed up to and including a 100 mph emergency "roll-out" stop, in all cases, the B. F. Goodrich brake performed smoothly, quickly, safely without excessive vibration or chatter.

Because of its exceptional stopping ability and long life, this new brake is now being considered by other aircraft manufacturers for future planes. If your design team would like to discuss technical details, contact:



And now Lockheed reports:

American Airlines, Eastern Air Lines specify B. F. Goodrich wheels and brakes on their Electras

To meet exceptional braking requirements of America's first propjet airliner, Lockheed selected B. F. Goodrich wheels and brakes for its Electra. Two major airlines have already specified this new equipment on their Electras. Current flight tests on a large jet transport

affirm the importance of this new brake for all classes of modern airplanes. B. F. Goodrich-disk brakes have higher capacity for faster, chatter-free stops than any brake on the market today—your assurance of longer service life with reduced maintenance.

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Procurement puzzle . . .

*Air Force starts cutbacks to stay within 1958 spending ceiling;
which programs will be hardest hit is not yet known*

by Henry T. Simmons

AIR FORCE undertook some drastic surgery this month on its procurement program, but deeper cuts are still to come.

After seven years of development work and the investment of an estimated \$450 million, the airmen cancelled the North American Navaho missile project.

The painful decision was one of a series of many which the Air Force, Navy and Army must make if they are to stay within the \$38 billion spending ceiling ordered by Defense Secretary Charles Wilson for fiscal 1958. In general terms, the expenditure ceiling means:

Existing procurement contracts funded in fiscal 1957 and prior years must be curtailed or stretched out to avoid over-spending.

Planned procurement in fiscal 1958 will ease sharply because stretch-outs in existing programs will reduce the size of new orders needed to assure continuity of production.

Just which programs will feel the knife is not yet known, although the services have labored mightily this month to find answers satisfactory to Secretary Wilson. In the Air Force, for example, procurement officials have worked out more than a dozen alternative schemes for absorbing the reduction, but none has been adopted at this writing. With the first month of the fiscal year almost over, all parties agree that a decision, to be effective at all, must be made as soon as possible.

Until the decisions are forthcoming, the aircraft industry can expect to remain in a state of jitters. This is readily understandable when one contemplates the impact of the Navaho cancellation on North American. On the Monday following receipt of the bad news, North American handed out dismissal notices to 6,300 employees of four of its Los Angeles area divisions and announced it will drop another 9,300 by the end of the year. Total

reduction: 15,600, or just about one out of every three of its Los Angeles employees. Loss of the Navaho is responsible for part of the reductions; declining labor requirements for manned aircraft production are blamed for the balance.

North American's Missile Development Div. at Downey bore the brunt of the immediate layoffs—3,700. The cut trimmed MDD to less than half its former strength of 7,000 and included

Elimination of the Navaho was not entirely unexpected. No funds had been requested to sustain the project in fiscal 1958, and it was understood that a live-or-die decision was to come this fall. The odds for several months have favored the latter alternative. That the decision itself came sooner than expected can probably be attributed to the severity of the Air Force's financial plight.

Uncertainty over military procure-

Military spending rates have traditionally been controlled indirectly by the Defense Department through its power to release to the services funds voted by Congress. This method proved satisfactory until fiscal 1957 when military spending out-ran the forecast by almost \$2.4 billion.

Confronted by the possibility that fiscal 1958 military spending could jump as much as \$4 billion over the original estimate, Defense Secretary Charles Wilson issued his now famous edict of May 22 ordering the services to "submit a detailed plan . . . for meeting their 1958 expenditure objectives." This meant that figures previously considered forecasts are now firm ceilings, and therefore have more significance than when they were originally presented. Here are the fiscal 1958 ceilings in two key accounts for the aircraft industry:

	<i>Aircraft and Related Procurement</i>	<i>Guided Missiles</i>
Air Force	\$4,983,000,000	\$1,213,000,000
Navy	1,645,000,000	264,000,000
Army	109,000,000	562,000,000
Defense (total)	\$6,737,000,000	\$2,039,000,000

some 1,500 engineers and their supporting workers. Other immediate layoffs included 1,450 from the Los Angeles Div., which builds the F-100D and F-100F, 1,000 from the Autonetics Div., which supplied Navaho guidance, and 150 from Rocketdyne Div., which manufactured the missile's rocket booster engines.

Layoffs were only part of the story, however. When the axe fell on North American, it also terminated some \$35 million in orders and subcontracts placed with 2,680 Navaho suppliers—900 of them located in the immediate Los Angeles area.

ment objectives for the immediate future is by no means the only major source of industry confusion. There is the further problem involved in the switch from manned aircraft to guided missiles. It is recognized that both the present Pentagon economy drive and the transition to missiles will tend to reduce the volume of defense business available to the aircraft industry as well as shake some companies out of the prime contractor role.

But which companies will succeed and which will fail? Nobody knows, of course. Even a careful assessment of individual companies' prospects can

provide little more than a guess because of the lightning changes characteristic of the industry. For what it's worth, however, here's a summary of the current position of the five largest U.S. aircraft companies:

Bleakest outlook probably belongs to North American Aviation, Inc. The F-100 is the only aircraft in production at Los Angeles, with activity assured into 1959. Company is working on the design of a long-range interceptor for the Air Force which could lead to a hardware development and production order. It is developing a twin-jet readiness trainer with its own funds. It is also competing with Boeing Airplane Co. for the WS-110 chemical bomber contract, but no decision has been made yet. It has no missile prime contract now that Navaho is cancelled.

Prospects for continued healthy activity in rocket engine development and production are good, and Autonetics Div. has been increasingly active in the electronics and guidance field.

The future is somewhat brighter for NAA's Columbus Div. in Ohio. It is presently manufacturing FJ4's for the Navy, tooling up to produce the T2J basic trainer for the Navy and developing the Mach 2 A3J attack bomber, a replacement for the Douglas A3D.

Douglas feels pinch too

Douglas Aircraft Co., Inc., has felt the bite of four cancellations in recent months. They included the huge C-132 logistics transport at Tulsa, the F5D Skylancer, the Sparrow II air-to-air missile and the A4D-3. The B/RB-66B bomber program is phasing out on the West Coast, but the A4D-2, F4D, A3D and C-133 transport are continuing. The RB-66C and WB-66C will continue at Tulsa until about the middle of 1958. Company is manufacturing

Honest John and Nike missiles for the Army, producing MB-1 nuclear air-to-air rockets for the Air Force and developing the Thor mid-range ballistic missile for the Air Force.

Of key importance to Douglas is its large commercial business. Its total backlog on May 31 was \$2,052,000,000, with commercial orders accounting for 57% of the total. Among these were orders for 123 DC-8 jet transports and 225 DC-6/7 machines—enough to assure capacity production of the latter through 1958.

Boeing Airplane Co. will remain in production on the B-52D at Seattle at least through 1958 and on the KC-135 tanker at least through 1959. Production of the "wet wing" B-52G will be concentrated at Wichita at a lower rate than originally scheduled for both divisions together. No volume production order has been placed yet for the Bomarc interceptor missile, but the company expects one shortly. This program should continue into the 1960's.

Boeing's commercial backlog consists of 151 firm orders for the 707 jet transport. These represent well over \$600,000,000 in value. Its biggest military prospect beyond the B-52: the WS-110 chemical bomber.

Convair Division of General Dynamics Corp. is manufacturing the F-102 and F-106 interceptors in quantity for the Air Force and it is developing the B-58 supersonic bomber at Fort Worth. Though no decision has been made to order the B-58 in quantity, such a move now appears inevitable. Company is also developing a nuclear aircraft for the Air Force, and it is providing the airframe for the Atlas ICBM. Navy projects include the Terrier I and II missiles and the Tartar missile as well as an anti-submarine flying boat development of radical design. Company is also actively pushing

the Model 880 commercial jet transport.

Like Douglas, Boeing and Convair, the activities of Lockheed Aircraft Corp. are well diversified in the aircraft field. Its military aircraft now in production include the F-104 fighter, the C-130 turboprop transport, the T-33 and T2V trainers, the P2V-7 Neptune and the WV-2 and RC-131F early warning aircraft. Missile Systems Div. is prime contractor on the Polaris mid-range Ballistic missile for the Navy and it is developing a drone application for the X-7 ramjet test vehicle. It is also developing a utility jet transport with its own funds.

Lockheed also is active on development of a nuclear aircraft. On the commercial side, the company is still manufacturing the 1649 piston transport and it is in early production stages on the turboprop Electra.

More reduction likely

Many of the programs now under way in these companies may be trimmed, stretched out or dropped entirely. The fact that some companies have already "gotten their lumps" is no assurance that the others will be immune. Nor should it be taken for granted that companies which have already suffered will be excused from further reductions.

What's more, it should be borne in mind that the fiscal 1958 buying programs originally presented Congress will also be reduced. The USAF plan to buy 1,515 aircraft in fiscal 1958 is now out the window, as is the Navy's program to procure 1,220 machines. Just how much they will be trimmed depends on the type and extent of cutbacks which must be ordered in current production programs. These decisions are still to be made as this is written.

Air Force takes lid off supersonic target drone



RADIOPLANE XQ-4 features long, small diameter fuselage, straight wing, underslung turbojet engine. Drone is radar controlled and has an operational ceiling of more than 60,000 ft. It is air-launched and recovery is by a three-stage parachute.

Survey predicts biggest aviation growth for general flying

by Donald Frederick

THE GROWTH of air transportation, in the next 20 years, will exceed that of an expanding American economy and air passengers will spend \$2.8 billion by 1975, according to a forecast of Aeronautical Research Foundation prepared for the President's aviation facilities planning staff.

The Cambridge, Mass. research group envisions a 180% increase in

This special AMERICAN AVIATION report deals with one of three phases of a study conducted by Aeronautical Research Foundation for the President's aviation facilities planning staff under a project headed by Airborne Instruments Laboratory. Reports by AIL and a third contractor, Cornell Aeronautical Laboratory, will be treated in subsequent articles in AMERICAN AVIATION.

the nation's spending for air travel, from \$1 billion in 1955 to \$2.5 billion in 1957. At the same time, ARF expects the U.S. gross national product to increase only 100% from \$387 billion to \$745 billion.

The Foundation reports that in the future, as in the past, air carrier activities will center around the transportation of passengers. Although it concedes the growth of all-cargo services has been impressive, ARF expects no significant shift in airline business from its basic passenger orientation. The big reason: cargo capacity passenger aircraft will continue to carry a large part of air cargo traffic.

ARF cites impressive growth in revenue passenger miles experienced from the period 1949-1956 (the average was a 15% increase with a 32.5% increase experienced 1951-1952). By 1975, it forecasts, increased air carrier activity will account for a doubling of aircraft movements and almost a three-fold increase in passenger miles.

Projections are for \$14.9 million aircraft movements and 66.7 billion revenue passenger-miles in 1975.

ARF used two methods in deriving the forecast of air passenger traffic, with both high and low estimates submitted for revenue passenger-miles and passengers. Low estimate for revenue passenger-miles in 1975 was 64.7 billion—high totaled 72.2. Revenue passengers, by one method, would number 120.3 million and by an alternate approach 179.7 million in 1975.

Forecast adopted in its final report estimates revenue passengers at 153.3 million in 1975. Wide disparities in the forecast of passenger movement were attributed to differences in the projections of trip length distributions, although both methods forecast higher growth rates in the long-haul markets.

Special consideration was given by the research group to future coach and family plan penetration of the air travel market. Family plan traffic would continue at a present stabilized level of about 10% of reported total passenger-miles less coach traffic, and would be distributed by mileage categories in the same manner as coach traffic. By 1975, coach traffic is expected to achieve 80% penetration of markets over 501 miles and 47% of those under 500 miles.

Biggest area of aviation growth is expected to take place in the general aviation fleet. According to ARF, fleet will increase from 58,000 aircraft in 1955 to 106,000 in 1975, and hours flown will reach 25.8 million. Composition of fleet will shift from a current predominance of light singles (60% in 1955) to a predominance of heavy singles and twin-engine aircraft (80% in 1975).

Here's how the Foundation expects general aviation to develop more specifically: Commercial flying will reach 3.9 million by 1975, as compared to 1.9 million hours flown in 1955. Aircraft in commercial flying will reach 20,000 by 1975.

Instructional flying will increase, in the next twenty years, from 1.3 million hours in 1955 to 2 million hours in 1975.

Extension of 1952-1955 trend indicates a 60% increase in the number of hours of pleasure flying from 1.97

Percentage of passengers to be carried by aircraft size and mileage group

Time Period	Small Aircraft	Medium Aircraft	Large Aircraft
1960-1965			
0-500 miles	48%	52%	....
501-1000 miles . . . .	....	75%	25%
over 1000 miles. . . .	....	25%	75%
1970-1975			
0-500 miles	16%	69%	15%
501-1000 miles . . . .	....	25%	75%
over 1000 miles. . . .	....	....	100%

million hours in 1955 to 3.2 million in 1975.

Business flying is clearly emphasized with estimates both as to hours flown and growth of commercial ownership submitted. High estimate is for a total of 12.6 million business hours, and industrial ownership of 58,000 aircraft by 1975.

Interesting protraction made by ARF envisions an Air Bus movement which assumes development of a 50-seat helicopter or STOL aircraft capable of competing for downtown-airport traffic by 1966 in the three terminal areas of New York, Chicago and Los Angeles. Operation was forecast at 60% load factor in competition with the conventional limousine service, and movements in the three areas were forecast at 581,000 by 1975.

How research group views future

	1955	1960	1965	1970	1975
Expenditures for passenger transportation (\$ billions)	1.0	1.4	1.9	2.3	2.8
Revenue passenger-miles (billions)	20.0	29.7	41.1	53.1	66.7
Revenue passengers (millions)	38.0	52.0	84.8	113.1	153.3
Air carrier movements (millions)	7.0	7.6	11.7	11.7	14.9

General Aviation aircraft active, 1955-1975

(thousands of aircraft)

Year	Total	Light Twins and Heavy Singles			Other
		Heavy Transports	Heavy Singles	Light Twins	
1955	57.6	.6	22.0		35.0
1960	58.9	.7	30.8		27.4
1965	66.8	.7	44.4		21.7
1970	81.6	.8	63.3		17.5
1975	105.8	.8	90.7		14.3

Estimates of business flying 1954-1975

Year	Hours Flown (millions)		Utilization (hours per year)	No. of Aircraft (thousands)
	Low	High		
1954	3.9 actual		181	20.9
1960	5.8	5.8	210	27.6
1965	7.3	7.8	220	35.5
1970	8.8	10.0	235	42.6
1975	10.3	12.6	250	50.5

B-58 owes performance to materials, design breakthroughs

But new cermets and ceramics are needed to achieve Mach 3 speeds, 75,000-ft. altitudes immediately sought by USAF, says Gen. Irvine

by Albert W. Bentz

FT. WORTH, TEX.—Two major "breakthroughs" made the 1,500-mph-plus Convair B-58 bomber possible—the NACA Area Rule (pinched fuselage) and honey-comb sandwich construction of fuselage and wing skins.

The Hustler is the first aircraft to make extensive use of honeycomb-skin construction. Approximately 90% of the skin surface of the fuselage and delta wing use the three-quarter-inch thick material.

The bonded sandwich construction is of two types—stainless steel brazed to metal honeycomb and aluminum bonded to high-temperature plastic. Stainless steel sandwich panels are used to resist aerodynamic heating as well as exhaust and afterburner heat. The aluminum panels are used primarily for rigidity to resist shock and vibration and provide a smooth surface for low drag.

But even these developments are not enough to get the aircraft in the regimes of Mach 3 speeds and 75,000-foot altitudes now being sought by Air Force, according to Lt. Gen. C. S. Irvine, Deputy Chief of Staff-Materiel.

Problem is that the B-58, powered by four 10,000-lbs.-thrust GE J79s

(15,000 lbs. with afterburners), already is capable of exceeding its design limits in speed, and new heat-resistant materials are necessary for a manned aircraft the size of the Hustler to get into that category.

The successors to the Hustler probably will use other materials.

Says Gen. Irvine:

"The skin composition (of the B-58), while a new concept in itself, actually consists of known substances.

Here are major suppliers on B-58 weapon system

Sixteen companies were commissioned by Convair, with Air Force approval, to produce major items and subsystems for the B-58 Hustler under the weapon system management concept. In addition, more than 1,200 vendors supply raw materials, off-the-shelf equipment and standard and non-standard items, and another 2,400 furnish operating supplies, special test equipment and facilities items.

Here are the 16 principal suppliers and their commissions:

Sylvania Electric Products, Inc., the passive defense system.
Sperry Gyroscope Co., the navigation and guidance system.
Fairchild Camera and Instrument Corp., photo-reconnaissance system.
Bendix Radio Div., *Bendix Aviation Corp.*, civil navigational aids.
Emerson Electric Manufacturing Co., active defense system.
Eclipse Pioneer Div., *Bendix Aviation Corp.*, autopilot and power control system.
Hamilton Standard Div., *United Aircraft Corp.*, air-conditioning system.
Federal Telephone and Radio Co., multiple power supply.
Minneapolis-Honeywell Regulator Co., diffusers for engines.
Westinghouse Electric Corp., alternator-constant speed drive.
Melpar, Inc., division of *Westinghouse Air Brake*, reconnaissance system components.

Advance Industries, indirect bomb damage assessment system.

Magnavox Co., communications system.

Goodyear Aviation Products, division of *Goodyear Tire and Rubber Co.*, wheels and brakes of main landing gear.

Menasco Manufacturing Co., landing gear.



DELTA-WING Convair B-58 loses only 2% of its efficiency when carrying detachable pod in supersonic flight.

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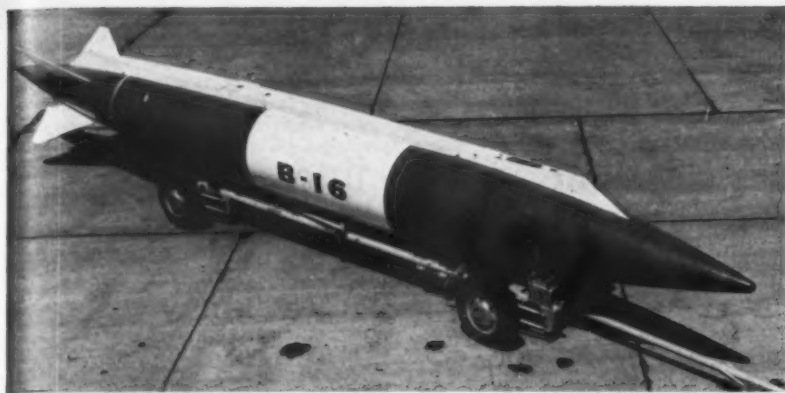
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JULY 29



DETACHABLE POD is being built in several versions—as fuel tanks or weapons.

We must go beyond this, to cermets and ceramics which are yet to be developed. We cannot produce weapon systems with the speed, range and altitudes needed in the years ahead unless we push ourselves past the ingenious uses of existing substances and come up with radically new materials."

The "years ahead" means Mach 3 and extended flight at 75,000 feet in the immediate future, Mach 10 for manned aircraft and 15,000 mph-plus speeds for missiles "within the next few years," Irvine says.

"Manned aircraft altitudes must reach or exceed 25 miles; and missile altitudes will range from 200 to 700 miles."

He added that the B-58 offers evidence of progress toward those goals, pointing out that the Hustler might be considered a transitional development "bridging the knowledge gap between what we previously thought were limitations and what we know now are expected possibilities."

The Hustler was developed for primary missions of bombing and reconnaissance. It is virtually an automatic aircraft, requiring only a three-man crew—pilot, navigator-bombardier and defensive systems operator.

It has been described as a "fuel tank riding on 60,000 lbs. thrust."

The external pod, carried beneath the fuselage, serves a multiple purpose—as a weapon or additional fuel capacity. Several configurations are under development. Already built are fuel-tank version and a rocket-powered low-altitude bombing missile.

Convair engineers report drag of the pod so low that the B-58 loses only 2% of its efficiency with the attachment. Theory of the external pod is that it permits a bomber to return from a mission without "empty bomb-bay space."

The B-58 is the first aircraft developed and built under the weapon system concept—a single contractor responsible for developing and procuring hardware and facilities (including ground support equipment), providing and training personnel and operating the system.

Both Convair and Air Force think the concept worked out nicely insofar

as the B-58 is concerned. August C. Esenwein, Convair vp and manager of the Ft. Worth Division, uses these results to prove his company's contention the plan has worked:

The program is on schedule. Dates set down more than three years ago are being met, with only fractional deviation.

The performances predicted are being met or exceeded.

On-time availability of vendor-furnished items "has been notable." No items have been so late as to preclude on-schedule deliveries of the end product to Air Force.

Technical and functional objectives for subsystems originally established are being met "in virtually all cases."

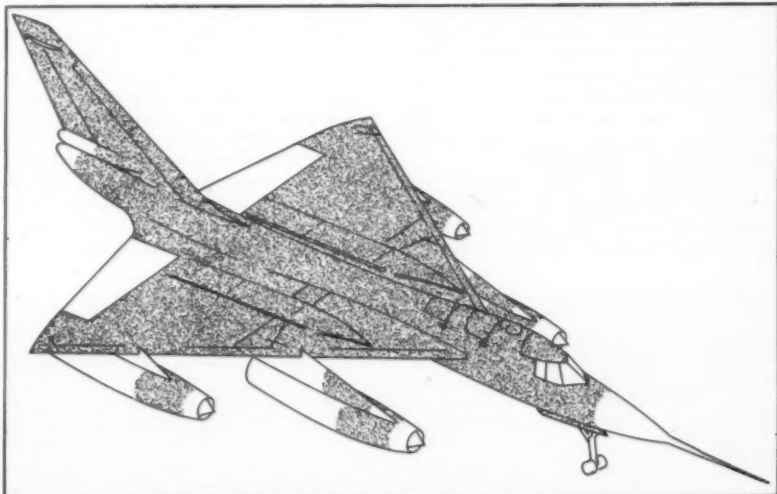
Time from program go-ahead to first flight was "notably short."

"Flexibility in the way of doing things—in tackling problems, in integrating and re-integrating effort, in sequencing necessary actions, in meeting the ever-changing demands of multiple interlocking situations and changing requirements and conditions—is what system management affords," Esenwein says.

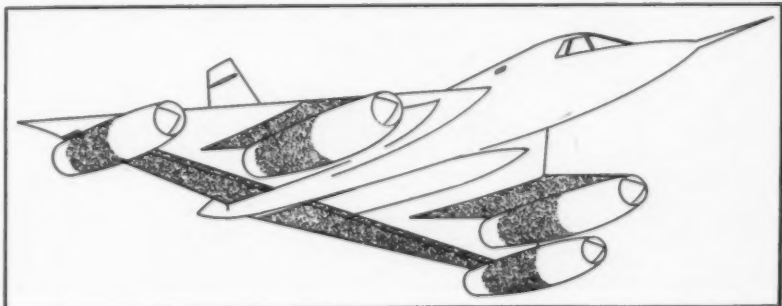
"This is so, because:

"Consolidation of responsibility and authority assures sensitive and timely and detailed program status knowledge. This knowledge, in turn, enables you to do what must be done, promptly and by the most expedient means."

He told AMERICAN AVIATION that the system also has the advantage of few change orders during production, since everyone interested already has had his say and the design is "frozen."



THESE DRAWINGS show how extensively honeycomb "sandwich" construction is used in the B-58. Approximately 90% of the wing and fuselage, all the tail and parts of the jet pods are constructed of bonded metal-to-plastic or metal-to-metal skins.



SHADED AREAS show where stainless steel brazed to metal honeycomb core is used for rigidity and resistance to heat in supersonic Hustler.

EQUIPMENT

Air Log's jet engine test system arouses interest

Mobile unit may reduce need for inventory of spare engines and large, expensive facilities at 'turnarounds'

by Richard van Osten

THREE AIRLINES, American, United and Pan American, were interested spectators during a demonstration of Air Logistics Corp.'s mobile jet engine runup and test system at George AFB, Victorville, Calif.

The new, six-component unit, designated Model 12,000A, has been developed by Air Log to provide a universal, lightweight, mobile and inexpensive means of running and testing turbojet engines up to 33,000 pounds thrust. It has an ultimate load capacity of 100,000 pounds thrust.

Airline interest in the system stems from the high price of turbojet engines, a factor every airline contemplating turbojet operation is examining very closely. The amount of capital tied up in piston engines stockpiled for replacement and overhaul is staggering. If a numerically identical amount of turbojets were purchased under the same spares concept, the capital investment would be astronomical.

The Air Log unit suggests the possibility of reducing the necessity of carrying an inventory of spare engines at every station on their routes. It

could also eliminate the need for large, expensive and space-consuming permanent test facilities at "turnarounds."

In event of engine failure at a point with no replacement engine in stock, but with a runup and test system available, a mechanic could be flown to the spot to repair and check out the engine at a fraction of the cost involved in maintaining a spare at that station, company officials say.

The system is composed of an instrument and control cab, a fuel-tank assembly, a tie-down assembly, two trailers and a standard auxiliary power supply unit.

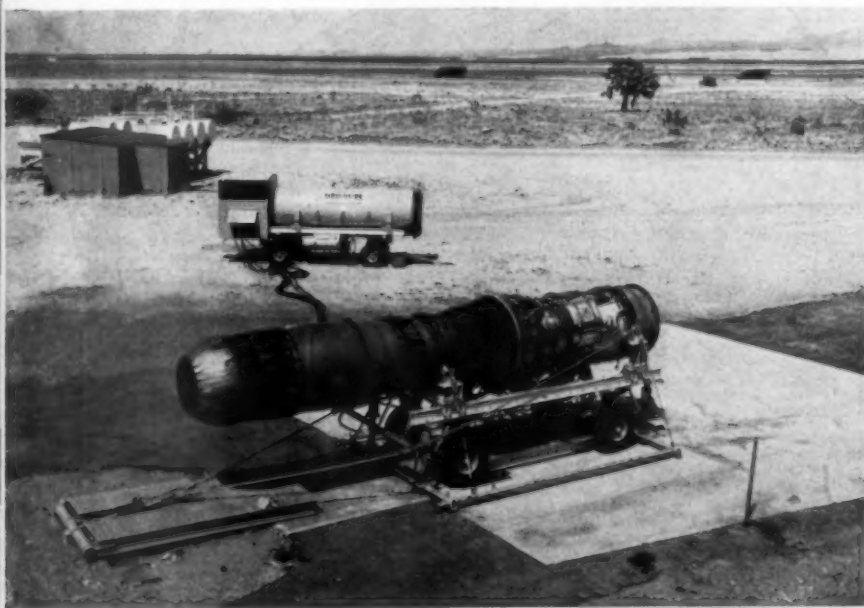
Two basic functions

The Air Log system is designed to perform two basic functions: (1) a checkout of all engine operations against the manufacturer's acceptable limits and (2) an automatic diagnosis of engine malfunctions that may occur during start, idle, normal running or shutdown, both on the engine and associated ground support equipment.

For runup and checkout functions, 17 separate measurements of



EARLY VERSION of test booth with room for only one operator shows Air Log's jet engine simulator (on technician's lap) being used to check out panel operation prior to actual engine test.



COMPLETE AIR LOG portable test stand has been installed at George AFB, Victorville, Calif. With the addition of a gas turbine cart, it would be ready for operation. Tank and shed in background are part of air base's equipment.

temperature, pressure or speed items are provided. Compressor rotor speed and tailpipe temperatures are recorded on permanent graphs to accompany the engine log. Other recorded indications are inlet temperature, fuel flow of engine in pounds per hour and engine thrust (direct reading in pounds).

Additional provisions are made for the selection of 10 other engine temperatures that may be individually selected and recorded according to needs of the test program.

The system can automatically diagnose a number of common engine and support equipment defects such as failure to light off, slow start, low oil pressure, vibration limit exceeded, over temperature at tailpipe, etc., all of which are registered by instrument panel lights in the control booth.

Engine starts may be made either manually or automatically. In the latter case, the control console sends and receives signals between its own components, the engine and the gas turbine cart. If a malfunction should take place during any of the starting sequences, the engine will automatically shut down and light the appropriate malfunction indicator light. If no "light-off" occurs within 20 seconds of the

automatic starting sequence, the entire operation will shut down and a restart will be required.

When a proper light-off takes place, the ignition shuts off at 50 percent, the console makes a continuous check for oil pressure at 50 percent rpm and, when the engine reaches idle, an idle light on the panel comes on. From that point, the operator may increase or decrease engine rpm with the hand throttle.

Safety features are built into the console also in event of a malfunction or failure of an engine component. An over-temperature tailpipe condition or an overspeed of the turbine or compressor will cause the console to take over engine control, retarding it to idle speed and lighting the appropriate malfunction indicator. If the operator believes it necessary to stop the engine, he may press the "ENGINE STOP" button or he may clear the console and return to hand throttle control by pressing the throttle transfer button.

If the engine fails to respond to normal control signals, the console turns off the fuel supply, closes the throttle, and stops the GTC cart if it is on. A series of electrical and mechanical interlocks prevent the operator from making a start unless the "ENGINE READY" light is on, indicating all starting conditions have been met.

Air Log's tie-down assembly incorporates a direct-reading thrust measuring device calibrated to compensate for force vectors which develop from the tie-down angles. Based on a standard 0 to 50,000-pound Baldwin Load Cell, overall accuracy is estimated to be approximately plus or minus one percent.

The company has designed the engine test equipment with the same concept

applied to their ground support system for turbine engines (AMERICAN AVIATION, Sept. 10, 1956, p. 46) which is now in use by Air Force at Nellis, Castle and George Air Force Bases. The rail-transfer principle used in this engine test system is compatible with other Air-Log ground support components. This makes it possible for a jet or turboprop operator to remove an engine, transport it to a work area, disassemble the engine, perform the required repairs, check the engine out and install it on an aircraft by means of rolling it along either trailer-mounted or fixed, workstand rails.

CASTING another eye in the direction of commercial turbojet operations, Air Logistics is developing a ground moving vehicle, designated as Model 10,000.

The new vehicle is neither a tractor nor a tug in the accepted sense, but a piece of equipment specifically designed to move a 300,000-pound aircraft at a speed of 25 miles per hour.

Two design features have been incorporated that are unusual for vehicles of this type. One is the reverse drive principle with which the vehicle moves an aircraft by transmitting the motion of its own driving wheels to the aircraft's wheels through friction contact. The second feature is the extremely low silhouette permitted by the use of a 550-bhp Hall-Scott "pancake" power package that allows close-quarter maneuverability around the relatively low wing configuration of jet aircraft.

The moving vehicle will have provisions for supplying 120-KVA, 400-cycle, 115-volt current to the aircraft, ground cooling facilities and compressed air for engine starting. These

services can be supplied while the aircraft movement is in progress.

The aircraft pilot has full control of steering during the time the aircraft is being moved, an intercom system provides immediate communication between the aircraft and the vehicle's operator.

The idea of such a vehicle offers some interesting possibilities for commercial jet operators. The company says the economic savings obtained on grounds of fuel savings, reduced engine wear and tear, reduced risk of foreign object damage, etc., will enable a jet fleet operator to pay for the vehicle in a matter of months.

New runway sweeper uses electro magnet

A self-contained magnetic-vacuum runway sweeper designed specifically for commercial airline use to support jet transport operations will be introduced this fall by the Sabre Metal Products, Inc., according to president Edward A. Yucis.

The unit will clear runways of heavy ferrous materials through use of an electro-magnet capable of lifting pieces weighing as much as half a ton. Non-ferrous material will be picked up by a powerful vacuum cleaner augmented with a jet-type agitator to blow material out of runway cracks and into the suction of the vacuum cleaner.

Yucis says that the cleaner will sell in the \$40,000 to \$50,000 range and that it will pay for itself in a short time by eliminating the cause of most of the damage to commercial airliner engines, both propeller and jets.

"We have found that about 75 to 80% of the damage to engines is caused by pieces of ferrous material picked up and thrown by airplanes on taxi and runways. Our cleaner will pick up both heavy steel pieces as well as non-ferrous debris."

The units will measure about 25 ft. long and 13 ft. high, Yucis said. General Motors is supplying a streamlined body for the unit, which is scheduled to be powered by a 500-hp Continental engine. Two persons will control the cleaner from an air conditioned cab.

Six of the cleaners have been ordered, according to Yucis, but the name of the purchaser has not been revealed.

The company demonstrated a tow-type magnetic sweeper recently at Washington National Airport. This unit cleared an eight-foot path of ferrous debris and lifted one steel plate weighing 540 lbs. It was pulled by a tractor. The magnet was operated by a 5 kw generator.

Some 40 airline and military officials attended the demonstration, which was held at the Capital Airlines hangar.



TWO-MAN CONTROL BOOTH has more instrumentation but is designed for one-man operation while the other acts as an observer or in whatever capacity test program may require.

Project Far Side probes for space-flight data

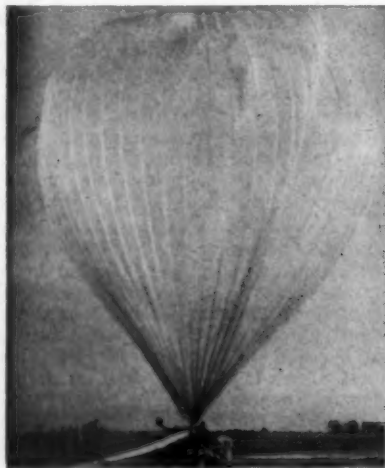
by William Beller

AIR FORCE'S first major venture into outer space research got off the ground June 28 when a balloon-plus-rocket program spearheaded by Ford subsidiary Aeronutronic Systems, Inc., became "operational." Subcontractors General Mills, Grand Central Rocket Co. and Thiokol Chemical Corp. backed up the project, dubbed "Far Side."

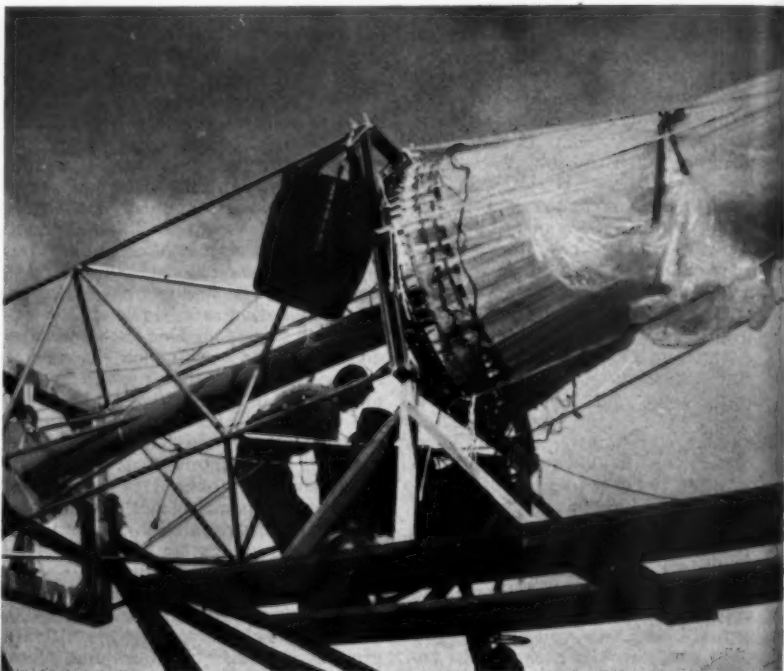
The military are probing the atmosphere with balloons, rockets and combinations of balloons and rockets to report on conditions there. So far the results have been meager, but we have learned that our upper atmosphere is cold, relatively empty and most inhospitable.

The latest probe to be thrust into lower outer space is an Air Force Office of Scientific Research (Air Research and Development Command) balloon, which was launched at the General Mills flight test center, near New Brighton, Minn. Described as the world's largest unpowered balloon, it weighs 1,500 pounds, is 200 feet in diameter, and when fully inflated contains 3¾ million cubic feet of helium. It lifted almost two tons of equipment to an altitude over 104,000 feet, a record height for such a payload.

This was a shakedown ascension, preliminary to others which will be continued during the summer's fair weather season. The stated purpose of the project is to enable Air Force scientists to continue investigating physical phenomena at extreme altitudes.



RECORD BALLOON FLIGHT was attained by the Air Force when it sent nearly two tons of payload to 104,000 ft. altitude.



BALLOON'S GONDOLA bears a long, one-foot diameter tube believed to be the guide for a two-stage solid propellant rocket.

The next phase of the project calls for using the balloon as a stable platform from which to launch exploring rockets.

At an altitude of 100,000 feet, more than 99 percent of the earth's atmosphere has been passed. It is apparent, then, that a rocket launched from such a height has only gravity to combat and will be able to travel deep into space with relative ease. Exactly how far is still a matter of conjecture because we have only theoretical calculations to tell us. Still, the problem is a straightforward one to solve, involving only rocket mass, motor characteristics and gravitational effects.

AFOSR took great pains to point out that the rocket is not destined for the moon. That it might be was derived from an unfortunate choice of a name for the project, "Far Side." This was taken to mean that the rocket would be exploring the hind side of the moon. However, names for Air Force projects are chosen at random from a long list of project names.

Prime contractor for Project Far Side is Ford Motor Co. subsidiary Aeronutronic Systems, Inc., Glendale,

Calif. Subcontractors are: General Mills, which was responsible for constructing this polyethylene balloon; the Grand Central Rocket Co. and the Thiokol Chemical Corp., which were responsible for the rocket design, and the University of Maryland, responsible for the instrumentation and for designating the experiments. Professor Fred Singer was project officer at the University.

Although details of the rocket configuration have not been released, AMERICAN AVIATION has learned that it is not a three-stage rocket as some reports have stated. Best guess is that it is a two-stage vehicle, one stage having been built by Grand Central and the other by Thiokol. If it is such a rocket, then altitudes greater than 1,000 miles are not only feasible but probable.

In the June 28 flight, information was telemetered from the balloon to ground receiving stations. Camera equipment, which photographed the flight and recorded information on balloon behavior, was released from the balloon 5½ hours after launching. Successful recovery of the apparatus was made through parachute.

Two questions have been asked regarding the Air Force's expanded interest in high altitude research: Will this service attempt to compete with the Navy by launching a satellite vehicle from the balloon? What military purpose will the balloon serve?

Air Force readily admits that it is possible to launch a satellite from its balloon. Representatives hasten to add, though, that the technical problems involved, particularly those of accurate guidance, are ones that the Air Force has no current interest in solving.

This project, says the Air Force, is research in a new dimension. It is unlike the satellite, in that the balloon's rocket is a vertical probe as distinct from the satellite, which is an orbital probe. The Air Force project is expected to complement rather than duplicate the Navy's work.

From a direct military point of view, the project will be useful for investigating the theory of long-distance communication and control, and will provide an unsurpassed laboratory for training technicians in the use of highly complex airborne electronic equipment.

Project Far Side is an outgrowth of balloon experimentations that in the past have been entirely backed by the Office of Naval Research. In September, 1956, ONR sent an unmanned helium-filled balloon to 144,000 feet. Constructed by T. J. Schjdaahl, this balloon had a 100 foot diameter and a one-million cubic foot volume.

Two months after this ascension, ONR sent an inhabited balloon to 76,000 feet in order to conduct experiments in aero medicine and in the

physics of the upper atmosphere.

During the International Geophysical Year, which started July 1, a number of balloons plus rockets will be used for upper atmospheric work. Called Rockoons, which comprise a balloon plus a Deacon rocket, one such combination vehicle was launched by the Naval Research Lab in July, 1956. With a payload of 20 pounds, the Deacon rocket in this experiment reached between 60 and 70 miles' altitude.

One high Air Force officer said recently that it would be possible with today's hardware to send a rocket to the moon. Except for the propaganda jump that the United States would gain over other nations, this officer did not feel that today the moon is a worthwhile military objective.

ALCOA doubles wide-sheet output

To help serve the aircraft industry's need for wide-width sheet aluminum for aerodynamic lifting services and heavy gauge aluminum plate for integrally stiffened wing structures, the Aluminum Company of America completed work this month on a \$54-million plant expansion in Davenport, Iowa.

This latest expansion at the \$130-million Davenport works doubles the peacetime capacity of the huge mill, which began operations in 1948. The present site now has 72 acres under roof.

New production units include:

(1) A 160-inch hot mill, widest in the industry. In effect, the mill yields 150-inch finished plate after trimming. Aluminum gauges worked are upward of 1 inch. The gauge range between 1 3/4 and 3 inches are most useful for sculptured wings.

(2) A plate-stretcher with a pulling force of 16 million pounds, also the largest in the aluminum field, and operated by Alcoa for the Air Force. This stretcher started operation July 1 and is used to rid aluminum plate of residual stresses. These stresses, if they remain, cause difficulty during machining operations.

(3) A 100-inch cold mill for finishing rolling wide, coiled aluminum sheet.

(4) Plate heat-treating and aging furnaces, able to accommodate 60-foot length plate.

Alcoa's new production facilities are joined for greater output with a 144-inch rolling mill which is this country's major fabricator of rolled tapered sheet and plate. This facility was installed in 1954 under an Air Force contract.

Tapered sheet from this mill is currently being used in the B-52 and the DC-8 programs. The DC-8 is using 10-foot-wide by 550-inch-long Alclad 7075, which tapers from .225 to .130 inches. To maintain its softness for

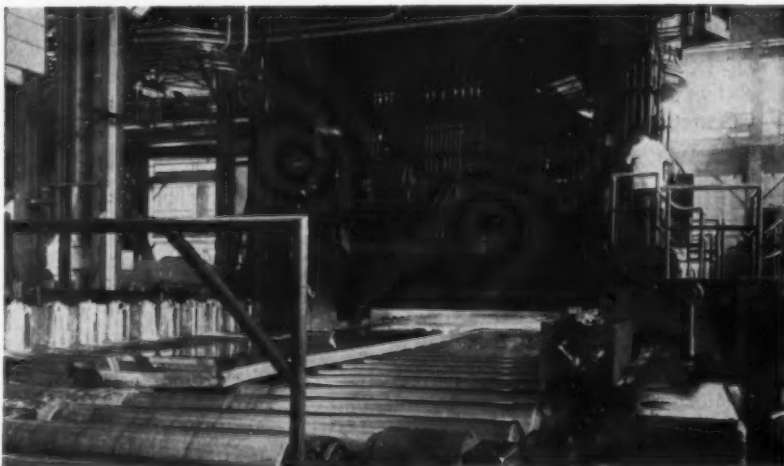
subsequent fabrication at Douglas, the sheet is shipped across continent in dry ice.

E. B. Fassel, Alcoa's Davenport works manager, said that the new

mills will be able to produce plate up to six inches in thickness and 12 feet in width, in 60-foot lengths. He added that the expanded facilities for sheet plate and foil including such supporting facilities as a wide range of furnaces, casting units and shears.



LOEWY 16-million-lb. stretcher, largest of its kind, is being used to straighten sheet and plate for aircraft applications.



WIDEST hot rolling mill ever placed in operation in the aluminum industry was unveiled at Alcoa's Davenport works.

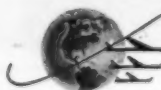
Keeping a fatal rendezvous in 4-D

Any hunter who's fired at a fast-flying duck knows you have to figure *time*—the 4th dimension—if you want the shot to meet the duck in flight . . .

Now substitute an airplane taking full evasive action at 40,000 feet or more, and conventional ways of aiming become obsolete. Yet this problem is *relatively* simple, as was dramatically proved at the first tests of the Nike missile, jointly developed by Bell Telephone laboratories and Douglas.

Even more complex than ground-to-air marksmanship is air-to-air gunnery, where opposing planes top 1000 mph, and fire missiles that move twice that fast. It's an entirely new science, based on principles first expounded by a Douglas scientist, and proved in repeated successful tests—even against unseen targets.

Depend on
DOUGLAS



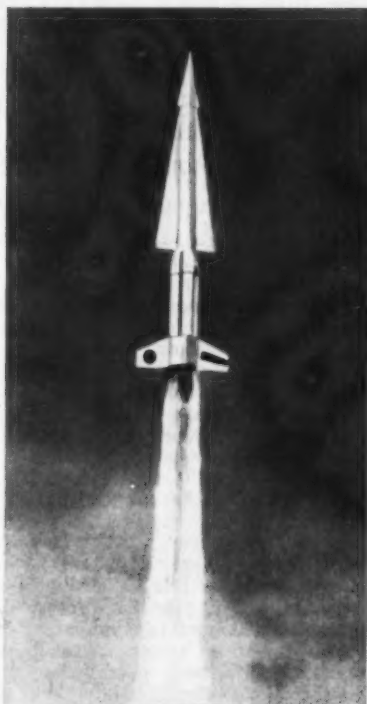
first in
Aviation



Dramatic moment in aviation history, a Douglas-built Nike-Ajax bores in on a drone bomber.



A split second later finds the bomber in flames, as Nike-Ajax scores a direct hit.



Here is Nike-Hercules, soon to take over defense of U. S. cities from the earlier Nike-Ajax. Tripling the range of its predecessor, Nike-Hercules can be armed with a nuclear warhead, to knock out entire fleets with a single blast.



Douglas engineers load the rocket pod of an F4D Skyray. Fire control problems at supersonic speed, naturally much greater than encountered at stable ground emplacements, are solved on principles developed by a Douglas engineer. Consistent hits can be scored by planes approaching one another at close to a mile per second, and even when unseen.

IMHEP: pushbutton control for helicopters

Bell 47H system combines Decca navigator, Bendix altimeter and Doppler hovering indicator for self-contained ILS

by Henry P. Steier

FIRST STEPS toward pushbutton control of helicopter flight have been revealed in a demonstration of an experimental self-contained instrument landing system.

Using a combination of the Bendix-Decca navigator, Bendix sonic altimeter, and a Doppler hovering indicator, Bell Helicopter Corp. is currently operating a number of its helicopters in tests designed to demonstrate capability for blind flying.

The program is part of a long-range project known as IMHEP (Ideal-Man-Helicopter-Engineering-Project) whose goal is helicopter capability to fly anywhere, anytime, under all conditions of visibility with pilots who have no special instrument training.

The project is sponsored by the Office of Naval Research in cooperation with the Navy's Bureau of Aeronautics and the Army Signal Corps.

Bell Helicopter Corp. acts as IMHEP coordinator.

Although IMHEP work is projected to getting the most out of helicopter potential for low-level military missions in combat zones under all-weather conditions, the work should contribute greatly to fuller use of helicopter capability for commercial use.

Specially equipped Bell helicopters are now operating near Ft. Worth, Tex. in tests designed to show capability to take off, fly to any spot inside a 100-mile area and make an instrument approach to within 10 feet of the ground without looking outside the helicopter cabin.

The Bendix-Decca navigation ground system being used is the first such portable system to be tried. One master and two slave stations are located in a triangle measuring about 80 by 60 miles and deliver an effective radi-

ated power of 20 watts.

A different approach was planned in setting up these stations for military use. Under combat conditions where stations might be moved frequently, the usual very careful surveying job and subsequent preparation of complex Decca charts would be impractical.

What would be done is to check the position of the chosen landing area, landmarks and terrain obstacles, by flying over the area. Once established, these positions could be transferred to other Decca charts for use by other helicopters. They could then be relocated under blind flying conditions to within 15-20 feet.

To fill in the other dimension needed for a helicopter pilot to avoid ground obstacles, Bendix-Pacific division developed a sonic altimeter. The experimental version of the device has a range of 2 to 150 feet. The instrument which displays altitude information is divided into one-foot increments for the first ten feet.

Similar altimeters were used by the Germans in the airship Hindenburg to aid in critical landing operations. The Bendix altimeter uses pulsed sound waves at about 3 kilocycles. Each sound pulse emitted by a 50-watt transducer is triggered by the previous pulse when received.

The altimeter has been under development for about two and a half years. Further development is expected to result in a system that will be capable of 300 feet altitude and will weigh 12 pounds.

Transitometer: motion indicator

Another special instrument under development for the new helicopter instrumentation system acts as a relative ground speed indicator. Developed by Kenyon Laboratories, Inc., Old Lyme, Conn., the device is known as a transitometer.

It acts as a two-axis indicator of motion translation of the helicopter in relation to the ground. Doppler signals are used to obtain translation information. These are fed to a Kenyon-designed instrument containing a grid line pattern.

The grid lines are marked on two layers of rear-lighted translucent material that are moved right and left or up and down by synchro motors under a stationary silhouette of an aircraft.

Movement of the lines against the model indicates the relative movement



EXPERIMENTAL INSTALLATION of advanced helicopter instrumentation. Large-scale flight plotter at lower left shows Decca navigation information and position of helicopter at final approach gate. Device at right center is Doppler-operated transitometer that indicates relative motion between helicopter and ground. "Breadboard" box at right houses controls for transitometer which may be fed by Decca signals and rotor attitude information.

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of helicopter over the ground. With this information the pilot can judge the helicopter motion without seeing the ground.

For landings under poor visibility and strong wind conditions and for flight in clouds, such a device is needed to ease helicopter pilot strain. The helicopter is not inherently stable and its control is an endless job. To make a helicopter stand still requires delicate control and good reference information. Slight movements of the stick to correct for false impressions of movement could cause rearward flight at a rapid rate.

Accurate presentation of relative

The IMHEP program planning is based on overcoming the helicopter flight control problem, relieving the pilot of mental calculations and dial reading tasks, getting new displays ideally suited to helicopters, and presentation to the pilot of information in a "natural" form.

For automatic control advantage will be taken of helicopter autopilots developed in the past few years. These will be used in conjunction with a central computer that will process all data coming in from sensing equipment.

It will perform calculations and generate command signals for auto-

degrees of brightness to emphasize relative importance of information.

Other degrees of emphasis could be gained by placement of information on the screen. If the helicopter were flying in certain modes such as cruising, hovering or landing approach, the display would be arranged in certain manners.

If, however, the central computer should receive obstacle information that indicated a potential collision, it would immediately provide a warning and rearrange emphasis of cues on the screen in a manner appropriate to the situation.

Another display is planned that would be mounted horizontally in front of the pilot. It would provide a picture of the navigation situation, show surrounding terrain and indicate position, track, time to target, maximum range and radius of action.

Miniaturization is expected to keep the weight of all this new equipment to a very low value. The computer is said to achieve new standards in this respect, and some of the sensing devices will be multi-purpose.

Bell, Bendix and Decca feel they have achieved the primary goal of their joint efforts in the helicopter instrumentation program by making it possible now to operate helicopters in remote areas at night in instrument flying weather.

New developments under the IMHEP program will be carried on with industry-wide participation through sub-contracts let by Bell for research efforts.



BELL HELICOPTER CORP.'s 47H, equipped with experimental flight information sensing and display devices, being used in a program for development of helicopter blind flying capability. Open area behind cabin houses Doppler motion and sonic altitude sensing equipment under test.

motion to the ground is also considered a critical helicopter need for student training. The hovering operation is said to be one of the most difficult to learn.

Under development at this time by Kenyon is a 3-axis transitometer. It is designed to show helicopter attitude as well as relative motion. A student using this device would be aided because the normal learning process calls for maintenance of attitude to accomplish hovering. As an adjunct to this he is taught to observe motion with respect to ground. He corrects attitude until there is no motion and then maintains position by maintaining attitude.

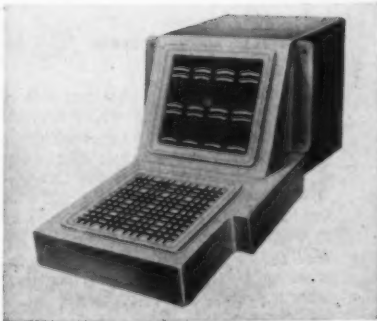
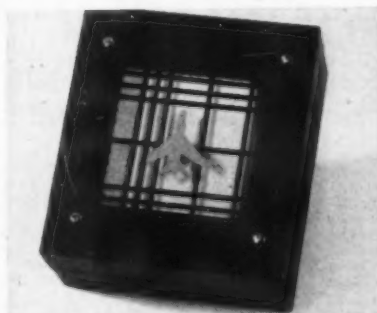
Various experiments are under way using different signal inputs to the transitometer display. Rotor attitude, Doppler radar, Decca signals, etc. have been tried.

Also under test is an instrument landing system for final approach and touchdown. Initial approach is down by reference to the Decca display. Then, for final approach, three needles on the cross-pointer instrument show glide slope, left-right deviation and distance to touchdown. Inputs to this instrument are from the altimeter and navigation system.

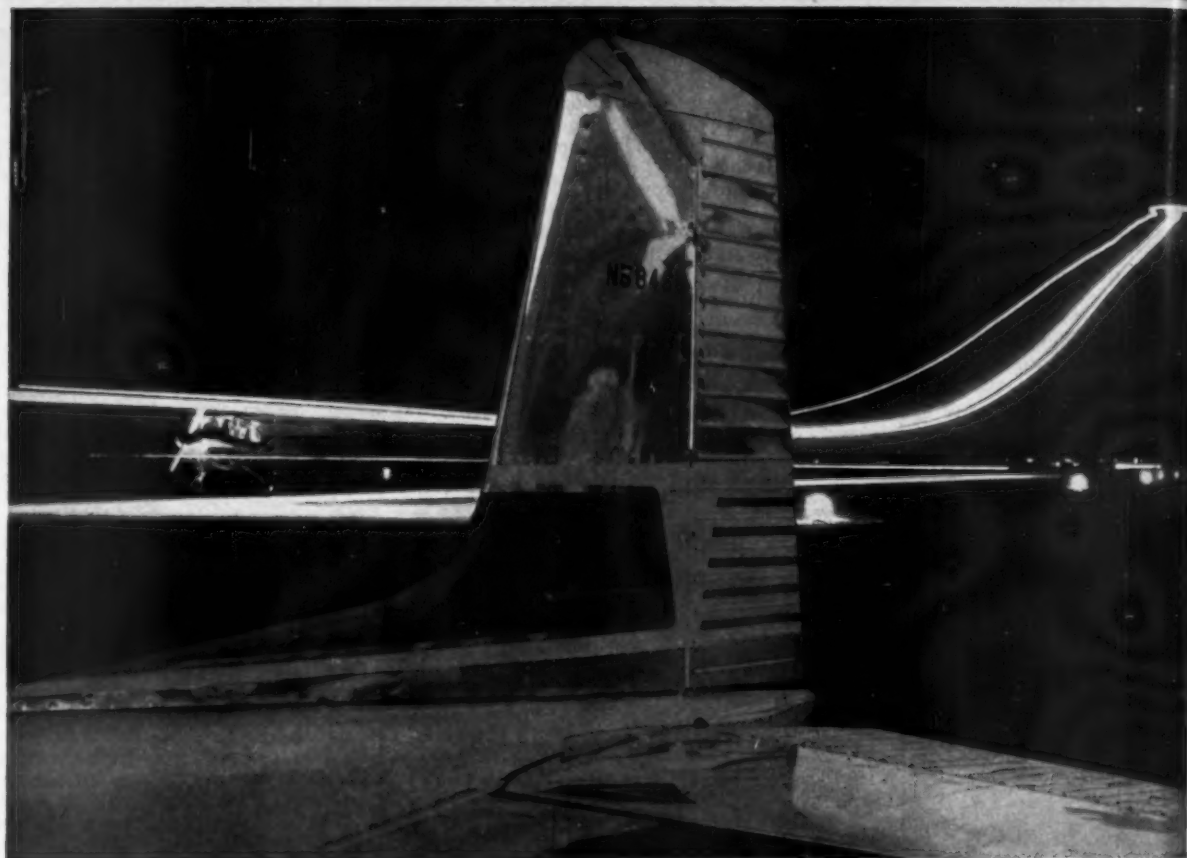
matic control of certain functions as well as feed signals in proper form for the pilot's display. The pilot will be able to choose automatic flight or can fly the helicopter himself. At the same time he will be able to interrogate the computer on certain items of information. It will also serve as a warning device on mechanical and aerodynamic conditions. The computer has been under construction for nearly a year and according to Bell promises to be a "revolution in computer circles." The new type of display to be served by the computer and envisioned by IMHEP engineers and psychologists calls for trials of the flat transparent television tube now being produced by Kaiser Electronics Corp.

Pictures, symbols and other cues to flight situations will be fed to the flat tube that will also serve as a windshield. Flying in the "soup," a pilot would watch the indications until he broke out into the clear. At the time the ground appeared he would not have to shift his vision for continued surveillance.

Thought is being given to provide the correct psychological optimums for the picture display. Symbols and pictures could be shown in various de-



TWO-AXIS TRANSITOMETER is shown at top. Below is drawing of a three-axis transitometer under development. It would show helicopter attitude on the upper screen.



Performance with a new *Flair!*

NEW CESSNA 182 COMBINES PERFORMANCE, HIGH-WING STABILITY,
LAND-O-MATIC SAFETY—IN AN EXCITING NEW LOW-SLUNG DESIGN!



Stability with a new *Flair!*

Here's the amazing flight package that cannot be matched by any other single-engine airplane:

Only the Cessna 182 in its class delivers top or near top performance in all ways: short take-off... fast high climb... long range... slow rate of descent—and it costs less than any other plane in its class.

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You'll see a new inches-lower silhouette with the look of motion in every line. It makes this great new 182 easier than ever to handle... on the taxi strip, down the runway, into the air!

For Cessna's wide-span Land-O-Matic landing gear is now even wider and lower-slung—more stable than

Comfort with a new *Flair!*

ever. Combined with Cessna's high-lift wing and lower center of gravity, it brings you easier, more positive control.

You'll see a new kind of cabin styling... a sleek, unhampered look featuring new comfort-recessed front seats, big new high-backed rear seats—plus luxurious new fabrics with textures and colors galore! New, more functional instrumentation. New, automobile-easy parking brake. Even new door closures for quietness.

The dramatic new Flair Flight Cessna 182 is priced (with std. equip.) at \$13,975, f.a.f. Wichita. See and fly it now at your Cessna dealer's—Yellow Pages of phone book—or write CESSNA AIRCRAFT CO., Dept. AA-2, Wichita, Kansas.

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JULY 29,

Bensen, Goodyear, Gyrodyne offer one-man copters

by George R. Shaw, Jr.

EFFORTS by a few aircraft companies to produce the "ideal" one-man helicopter for the military haven't quite reached fruition—or at least none has been completely weaponized as yet. But some of the results of the experimentation are filtering out into the civilian market and at least three models are being offered, or will be within a year.

The Bensen Gyrocopter evolved from a gyro glider that has been in use long enough to prove the design. Powered by a 40-hp, 2-cycle Nelson H59 engine, the Gyrocopter features pusher-type propulsion and an aircraft-type rudder, since the rotor is free-rotating the copter needs no tail rotor.

Extreme simplicity of design gives the gyrocopter a total weight, less engine, of only 60 pounds. Weight with engine is 185 pounds, and the useful load is 235 pounds.

Takeoff in the Gyrocopter is accomplished by making a short ground run to get the rotor turning up to speed, usually about 100 feet with no wind. With winds of 15 mph or more, the copter will rise and hover like a conventional helicopter when faced into the wind. Landing speed is 7 mph and landing run is said to be 0 to 20 feet.

Sold in kit form, the price of the Gyrocopter is \$895, less engine, and \$2390, complete. Any conventional aircraft pilot with a private license or better can fly the Gyrocopter. It is licensed as an experimental craft by CAA.

The Goodyear GA-400R is a conventional helicopter design utilizing a water-cooled 32-hp outboard engine. The main rotor is driven by a pulley-timing belt arrangement at a reduction of 10:1, while the tail rotor drive is at 2:1 reduction by V-belt arrangement. Main rotor controls are conventional and tail rotor pitch is changed by the rudder cables to provide directional control.

Forward speed is reported for the GA-400R as being 40 knots estimated cruise and 60 knots estimated top speed. Vertical rate of climb is reported to be 500 fpm.

Overall weight is 460 pounds, useful load 200 pounds. Main rotors are conventional laminated wood construction with a diameter of 18 feet. An overrunning centrifugal clutch provides for smooth starting and immediate auto-rotation in case of engine failure.

A Porsche automobile engine is the powerplant used by the Gyrodyne company to power its rotorcycle, also

developed for the Navy. Excellent performance and reliability are claimed for the engine and arrangements have been made with the Porsche Company, in Stuttgart, Germany, to furnish certificated engines for commercial rotorcycles starting in February, 1958.

Adaptation of the automobile engine to the one-man copter is a major step toward the low-cost production of the commercial model, a company spokesman said.

As with the other two designs, the rotorcycle will probably be available later in a two-place version.



BENSEN Gyrocopter has free rotor.



GOODYEAR GA-400R features water-cooled outboard motor.



GYRODYNE Rotorcycle is powered by Porsche automobile engine.

Sidelights on intra-European traffic

by Anthony Vandyk

SOME FASCINATING sidelights on intra-European traffic development are revealed in a report on the 1956 traffic statistics for the member carriers of the

Air Research Bureau.

ARB, a study organization headquartered in Brussels comprising most of the major European carriers, recently

issued a report comparing U.S. and European airline operations (AMERICAN AVIATION, July 15). Statistics contained in the latest ARB report reflect the intra-European traffic of the following carriers: Air France, Alitalia, British European Airways, KLM Royal Dutch Airlines, Lufthansa, Scandinavian Airlines Systems, Sabena, Belgian World Airlines and Swissair.

Passenger load factor for the ARB carriers' intra-European operations in 1956 was 60.8% compared with 60.0% in 1955, 53.7% in 1954, 57.4% in 1953, and 57.9% in 1952. Overall passenger traffic expressed in passenger-miles increased 121% from 1955 to 1956; 124% from 1954 to 1955; 118% from 1953 to 1954; 125% from 1952 to 1953; and 107% from 1951 to 1952.

ARB warns that, like many derived statistics commonly used in the air transport industry, the term "load factor" can be misunderstood and misinterpreted. Passenger load factor is an expression of the relationship between seats available and passengers carried and therefore its value as a measure depends upon the principles applied with regard to the assessment of load and capacity.

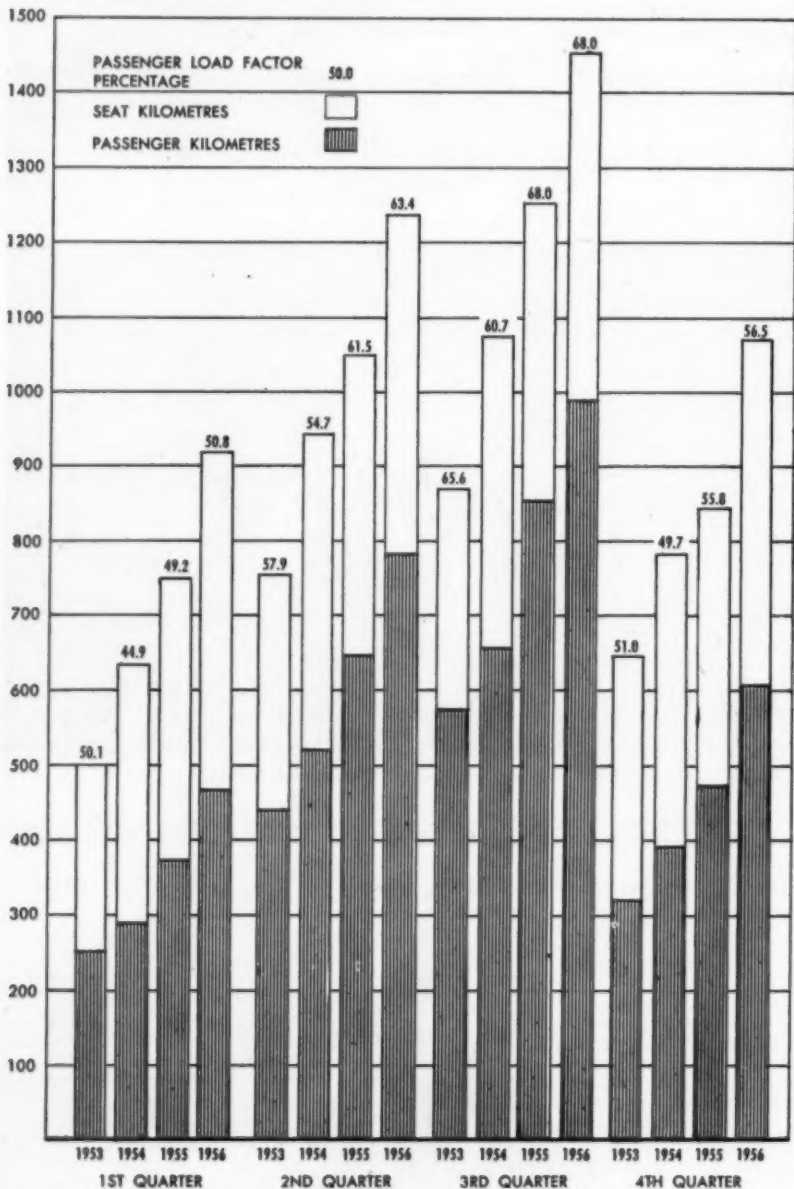
There is no special problem as regards load, but in the latter case—assessment of capacity—there are many variations between carriers. For example, in Europe, a DC-3 may offer from 21 to 32 seats, depending upon carrier and route operated. Furthermore, where mixed-class aircraft are used, a single load factor may be misleading since the load factors may be different in the two classes and the capacity will have been reduced in order to provide a higher standard of seating for the first-class passengers.

While passenger traffic from 1952 to 1956 increased 226% overall within Europe, the rise was greatest on the eastern European routes (596%). The smallest increase registered (145%), strangely enough, was on the popular London-Paris route.

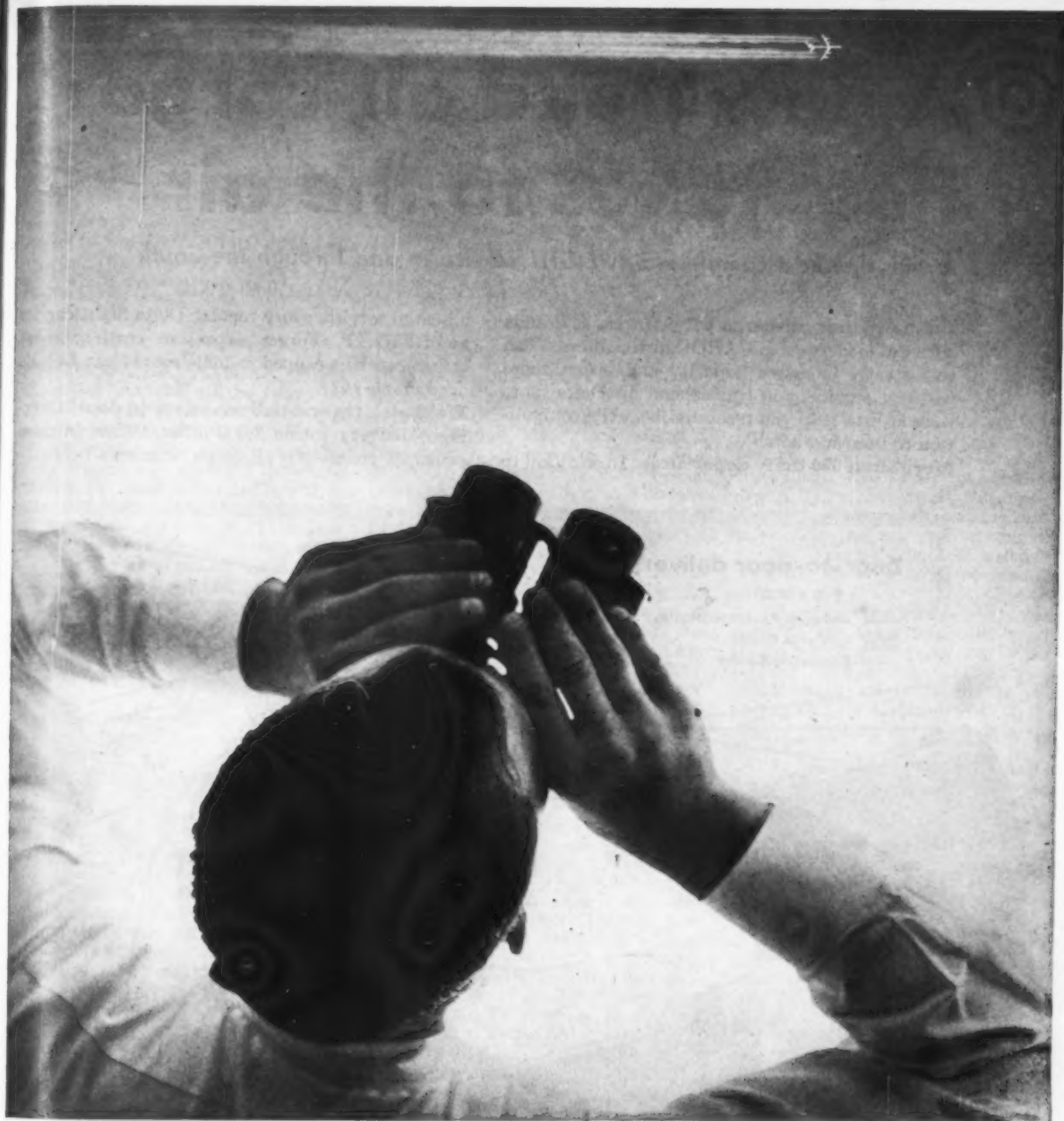
ARB points up the relatively slow development of mail and freight traffic within Europe as compared with the increase in passenger traffic. Most freight in Europe is carried on passenger services. The ARB statistics show that while freight capacity on these services increased by 106% from 1952 to 1956, mail traffic carried rose by 67% and freight traffic by 71%.

For the period 1952 through 1956 freight traffic on all-cargo aircraft showed a 78% increase while mail traffic on all-cargo aircraft remained stationary.

MILLION KILOMETRES



MARKED PEAKS AND VALLEYS are a feature of the intra-European passenger traffic of the ARB carriers. This chart shows capacity offered and utilized for each quarter from 1952 to 1956 inclusive.



Vapor trails high in the sky will remind you that the 707 is flying its proving runs. Soon these fine planes, the first American jet transports, will come off production. American Airlines will be first to offer jet travel in the U. S. A. Early in 1959 American will use the 707's on transcontinental Mercury service. **AA AMERICAN AIRLINES**
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Delta expands all-cargo lift 6 times, as it adds a fleet of modern ALL-CARGO airfreighters. With this greatly increased capacity and faster, more frequent service, you can depend on Delta more than ever to help you meet and beat the competition to your markets!

More than 500 daily departures. In addition to

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NEW ORLEANS
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Airlines, CAB staff face showdown in fare case

Carriers' financial future hinges on outcome of five-hour oral Board hearing July 31

by William V. Henzey

THE FINANCIAL FUTURE of the U.S. airline industry will be riding on a five-hour oral argument before the Civil Aeronautics Board July 31.

Attorneys for seven domestic trunk airlines will have 2½ hours to convince the most bipartisan Board in years that you can't buy something with nothing, particularly \$5-million jet aircraft. The Board will then listen to 2½ hours of argument by its staff which, in effect, will be saying the airlines are getting more than they need now.

In the balance will be the question of how to make ends meet today and still pay for a \$2-billion commitment for a jet and turboprop fleet. In the background will be the keeper of today's tight money market—the financier—who is only impressed with the airline's ability to pay their way.

From the airlines' standpoint, there have been two major developments to stir up optimism as the climax of the most important industry-wide case in years approaches: (1) actual operating results, as contrasted with conflicting estimates, confirm airline arguments that traffic continues to increase but profits are dropping steadily; and (2) an amazing display of affirmative public support for the carriers' modest, but essential, fare boost.

The most up-to-date traffic and financial results to be weighed by CAB tell this story on a carrier-by-carrier basis:

DELTA AIR LINES: Through June, 1957, gross revenues increased 16.8%; traffic measured in revenue passenger miles, increased 18.4%; but operating profit is down 20.7%. Thus, as cash receipts increased \$6.3 million to a record \$42,601,418, Delta's operating profit dropped over \$1 million to \$3,953,700.

AMERICAN AIRLINES: Actual figures through June show a \$12-million gain in revenues but a \$4.1 million drop in net profit. On record revenues of \$152,017,238, up 8.3%, and record traffic, 2,540,105,562 revenue passenger miles, up 8.3%, AA's net before inclusion of profits from disposal of property was \$5,676,836, as against \$9,738,642 for the first six months of 1956. Including property disposal profits, AA's total net earnings were

\$6,813,936, down from \$10,670,812 the previous year.

BRANIFF AIRWAYS: Actual figures through May, 1957, show a 20% gain in traffic but a 37.5% drop in profits. Domestic revenue passenger miles jumped 53.5 million to 340,261,552; operating profit went down from \$1,534,556 for the first five months of 1956 to \$960,253 this year.

CAPITAL AIRLINES: Actual figures through May show one of the industry's sharpest traffic increases, a reduction in net operating loss, but virtually no improvement in net loss when interest charges are added. CAP's revenue passenger miles jumped over 210 million to 563,216,100. Net operating loss was reduced from \$1,682,556 for the comparable 1956 period to \$353,083. But with addition of \$1,617,000 in interest charges, this year's net loss is \$1,927,677 as compared with \$1,983,286 a year ago.

NATIONAL AIRLINES: New competition appears to be taking its toll as NAL's traffic and profit dropped for the first five months. Traffic was down some 13 million revenue passenger miles to 506,423,000. Net operating profit dropped from \$7,026,469 to \$3,913,117. NAL officials estimate the drop for the fiscal year ended June 30, will be between \$3 and \$4 million when all figures are compiled.

NORTHWEST AIRLINES: For the five months through May, domestic revenue passenger miles were up 13

million to 329,301,000, but its net operating loss was greater than at the same time last year. This year's red ink figure is \$1,739,000 against \$1,098,000 through May, 1956.

When these early five and six-month figures are weighed against the \$15-million drop in operating profits suffered in the first quarter this year by the domestic trunk industry, the need for the fare boost becomes apparent.

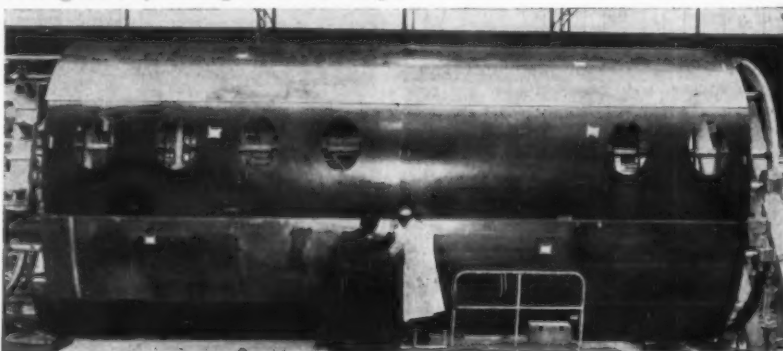
American Airlines is not a direct party to the CAB fare case but has served notice of its intention to boost fares if CAB grants a favorable decision on the proposals of the seven parties directly involved. AA also advocates elimination of certain fare discounts.

In announcing six-month results, AA president C. R. Smith said "there is no indication that the continually increasing costs will ever revert to the level which existed when present airline fares were established 15 years ago."

It was in obvious recognition of the industry's critical situation, plus an interest in preserving a high standard of air service in their areas that led Chambers of Commerce of major cities to write CAB recently in support of the proposed fare increase.

Los Angeles Chamber of Commerce board of directors voted unanimously to endorse the airlines' plea. Vote was communicated to CAB

Vanguard fuselage takes shape



FUSELAGE of first Vickers Vanguard is taking shape at company's Weybridge plant behind line of Valiant bombers now being phased out. Turboprop transport is due to fly in 1959.

Chairman James R. Durfee by the group's transportation director A. R. Allen, who said "an equitable increase in air passenger fares is recommended to enable airlines to provide adequate service and maintain a high standard of safety."

Allen noted the "present trend of inadequate profits, if continued, could require the airlines to look to the government for aid, through the resumption of subsidy payments."

Another strong voice for the carriers was that of Harry R. Hall, executive v.p. of the Dayton (Ohio) Area Chamber of Commerce who wrote CAB: "Present airline profits (and losses) appear to be inadequate to meet airline commitments for new equipment. The main source of revenue—the passenger fare—should be sufficient to allow the airlines to meet their new equipment commitments. We recommend strongly that you take immediate action to alleviate this unhealthy economic condition."

Kansas City Chamber of Commerce president Jay B. Dillingham phrased it this way in his communique to CAB: "We business people who are large users of air transportation strongly feel that it is reasonable for us to pay a nominal increase in our air fares since other modes of transportation have received substantial rate increases."

In Congress, Rep. Richard Bolling (D-Mo.) took the floor on behalf of the industry bid emphasizing the stability of airline fares over the inflationary years.

In Cleveland, the *Cleveland Plain Dealer* editorialized as follows: "We feel there is justice in the airlines' case. Fare relief has been accorded the railroads and bus lines. With its vast Military Air Transport Service system, the government already competes unfairly enough with private air carriers. The situation should not be aggravated by denying the airlines money sorely needed to pay for new jet equipment."

Significantly in the face of this public endorsement, there was not one consumers group or one member of the public during the 32 days of public hearings in the case who stepped forward to protest the price hike proposal.

In addition, the CAB staff, whose exhibits appeared on the unrealistic side during the case, made an unsuccessful eleventh-hour effort to revise those exhibits just before the hearings ended July 9. Examiner Ralph L. Wiser refused to accept the revisions, upholding airline arguments that the revisions never before had been made public.

Thus, the biggest step yet toward the jet age since the actual signing of contracts for jets comes to a head, with final responsibility resting on the shoulders of CAB's five Members. A decision by early August is a distinct possibility although the deadline is not until September 27.

Boeing gives details of medium-short-range Jet; 717 to be powered by J79, carry 88-130 passengers

Boeing Airplane Co. has revealed first details of its 717 short-to-medium-range jet airliner which is being offered to airlines of the world for delivery in 1960.

The announcement is an indication that the company has received an order for one or more 717s, third member of the Boeing family of commercial jet transports.

"The 717 is the third step in the Boeing plan to provide the airline industry with a complete family of modern airliners, one or more of which will provide the best possible economics for any particular airline route pattern," J. Bruce Connelly, vice president and general manager of Boeing Transport Division, said.

Although the 717 will have the same external dimensions as the 707-120 Jet Stratoliner, it will have a gross weight of 185,000 lbs. compared to the -120's 247,000 lbs. at takeoff. The lower weight figure is a result of lighter structure and smaller fuel load, which are compatible with the ranges for which the 717 is designed, Boeing officials said.

The other and largest Boeing jet is the 707 Intercontinental for long-range operations. A total of 151 707s have been ordered by 13 airlines.

Basic configuration is designed around four Pratt & Whitney JT3 engines but General Electric J79 or other engines in this power class may be used.

The 717 will be capable of take-offs and landings on runways presently available at the major and intermediate airports of the world, according to Boeing officials. CAR field length re-

quired for full gross weight takeoff will be 5,400 ft. with dry power ratings. Landing at 150,000 lbs. will require CAR field length of 5,500 ft.

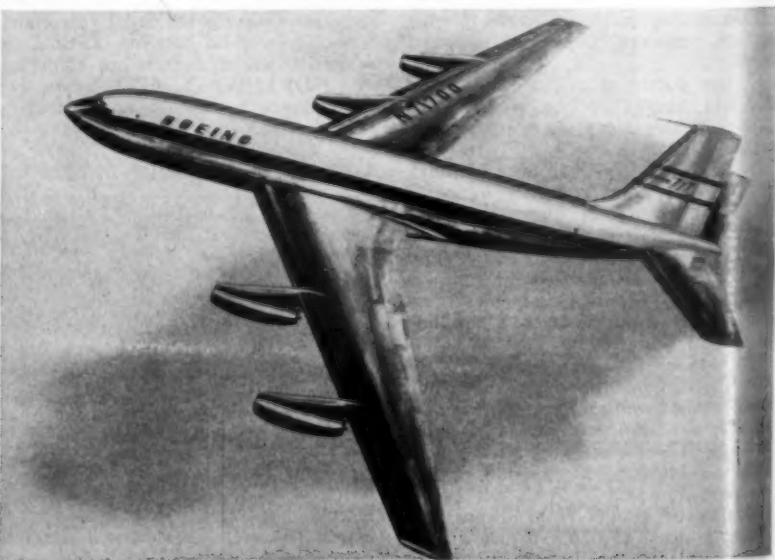
The new Boeing will be built at the Transport Division's Renton, Wash. plant on the same production jigs and tools and on the same assembly line as the 707 series, thus making possible

707 Specifications:

Dimensions:
Wingspan—130 ft. 10 in.
Length—128 ft. 10 in.
Tail Height—38 ft. 7 in.
Cabin width—12 ft. 4 in.
Wing sweepback—35 degrees at 25% chord
Power—Four P&W Advanced JT3 engines
Cruising speed—550 to 600 mph
Cruising altitude—25,000 to 40,000 ft.
Range:
Maximum payload—1,700 miles
Full passenger payload—2,400 miles
Gross weight—from 185,000 lbs.
Design payload—32,500 lbs.
Passengers—88 standard, 130 tourist
Landing gear—tricycle-main undercarriage units, four-wheel bogie type trucks, dual nose wheels.
Fuel capacity—10,092 U.S. gallons
Crew—three: pilot, copilot, flight engineer.

interchangeability of parts and common spares for the three airplane types.

The 717 will operate economically on flights of from 200 to 1,700 miles, cruising at speeds from 550 to 600 mph, at altitudes from 25,000 to 40,000 ft. Passenger capacity will be from 88 first class to 130 tourist.



ARTIST'S CONCEPTION of Boeing 717 medium-short-range jet transport. External dimensions are same as those of 707-120.

SAFE's Cargon outmodes U.S. airfreight methods

*Movable floor on wheels is secret of success
of unique airfreight service over New Zealand's Cook Strait*

by Wayne W. Parrish

I HAVE OBSERVED and flown with the most unusual airfreight service in the world.

Ten years ago if somebody had told me I'd have been in the same airplane with a railway car I'd have thought they were crazy. But I have actually flown in the same plane with one of 50 such cars being moved from one island to another.

I'm referring to an airfreight service that is only 72 miles long but which this year will fly more than 30,000 tons of freight (or 34,000 short tons). That's more than 60 million pounds.

It is an operation that will quicken the pulse of anyone who believes that the airplane is a real freight carrier. And it will convince skeptics that under the right circumstances the airplane is a volume carrier at low rates.

Hand it to a New Zealander for coming up with the finest and most workable secret for air freight movement, a kind of gimmick that makes airfreight handling in the U.S. look pretty backwoods, inefficient, slow and costly.

This secret is a simple removable floor that integrates the airplane into rail and truck transportation. It is called

Cargon. An article describing the operation appeared in *AMERICAN AVIATION* for June 18, 1956. I, myself, didn't fully understand or appreciate what *Cargon* was all about until I saw it in operation.

Where is it? New Zealand. The airline is Straits Air Freight Express Limited, known as *SAFE*, P.O. Box 751, Wellington, C.I. The general manager and the inspired driving force behind this unique airfreight development is Thomas M. A. O'Connell, a wirey, tense believer in the airplane as a freight carrier who got interested during the latter part of World War II.

At that time New Zealand had a rail strike and the Royal New Zealand Air Force transport service, of which he was traffic manager, was called upon to fly C-47s during the strike emergency.

The setting is ideal. New Zealand consists of two main islands, North and South. It has a national railway system running from north to south but interrupted at Cook Strait, which separates the two islands. Until recently, the railway used a sea-ferry connection for passengers and freight.

Although the two islands are fairly



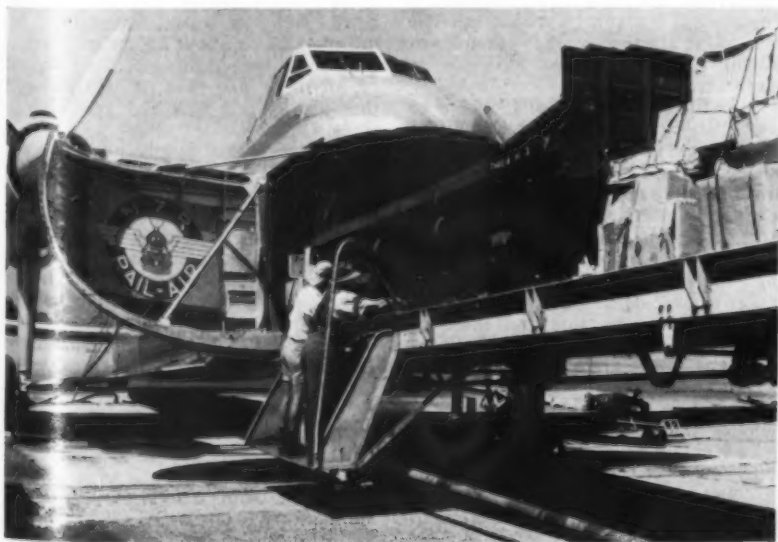
GEOGRAPHY of New Zealand is tailor-made for airfreight . . . and *Cargon*. *SAFE*'s operation spans Cook Strait, joins railheads on North and South Islands.

close together (20 miles at closest point), from port to port the distance is somewhat longer—and the sea is one of the roughest to be found anywhere in the world. The airport-to-airport distance is 72 miles because of difficult terrain problems on the two islands.

Out of the early military operations of C-47s and C-46s there developed ideas about expanding the service with more suitable equipment. In 1949 a new government favorable to private enterprise was voted into office and about that time an early Bristol airfreighter had arrived for a demonstration tour. Tom O'Connell got busy, dreamed up a new company and got government permission to operate.

Today *SAFE* has two operations. One is a private charter service, available on demand, to haul just about anything anyway.

But the major operation is strictly a contract service for the New Zealand Government Railways. In this operation *SAFE* has no dealings with the public or individual shipper. It merely hauls rail freight from one island to the other on clockwork schedule and with a calm efficiency that is unbelievable until you



RAILROAD SHIPMENT by air. Operators (left) adjust height of loading transverse as railroad car and airfreight are loaded on *Cargon* units.



SPECIAL REFUELING rig at Paraparaumu keeps ground operations in pace with quick-turnaround Cargon operations.

witness it.

For example, take the railway car. Railway cars in New Zealand are not the big babies we have in the U.S.; they are the same size that are used in England. But nevertheless, a single car weighs five and a half tons empty and it's pretty clumsy. Just happened when I was in New Zealand that SAFE was engaged in transporting 50 of these railway cars from the south island to the north because the railway was short of cars up north. Last year SAFE moved 60 such cars. And it was as routine an operation as you can imagine.

The railway freight car is on the spectacular side, perhaps, but the ordinary airfreight load hauled by SAFE is just plain railway freight, lots of it, consisting of just about everything you can name. High-density, low-volume stuff such as coal, steel, iron, cement, petroleum continues to be transferred by sea, but virtually all low-density freight including 95% of all furniture moving between the islands, goes by air.

What makes SAFE such a slick operation is the patented Cargon, which is nothing more than a movable floor of 56 square feet on rollers.

The standard Cargon is eight feet long by seven feet wide, made of extruded aluminum planks. It moves on 12 small wheels recessed in aluminum channels on the underside. The wheeled platform weighs just over 200 lbs. empty. It will take a 6,000-pound load, held in place with eight 2,000-lb. tie-down fittings.

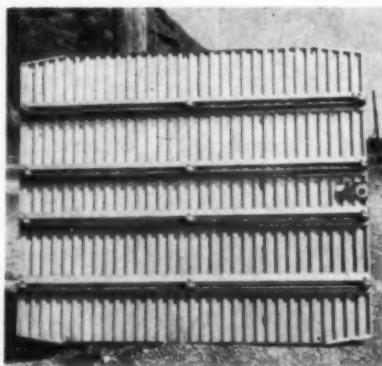
The movable floor permits loading at far-away places, eliminates any intermediate loading or unloading and frees both trucking and airplane equipment from being tied up during loading and unloading.

To an operating man the following may be illustrative: Although the flying time on the SAFE operation is only 26 minutes, airplane utilization runs to 2,000 hours a year on a six-day pattern.

I saw a Bristol 170 freighter land, taxi up to its correct position (which the pilot easily recognizes when the wheels move into a depression) and watched as a 6½-ton load was unloaded, another 6½-ton load moved into the airplane, the plane refueled and engines started for taxiing out, all in the space of 10 minutes, with the two or three men involved in the whole proceeding moving quite leisurely. This was no test or demonstration; it was routine.

The entire turnaround process has been done in eight minutes. Average, they say, is about 12. But if the entire performance goes a second over 20 minutes, somebody has to write out a report giving reasons why.

All day long the Bristols shuttle back and forth. There is a 45-minute lunch period. Otherwise, SAFE oper-



CARGON is basically a movable floor. Underside (left) has 12 small wheels recessed in aluminum channels. Top covering is of aluminum extruded planking.

ates for the railroad from 6 a. m. to 10:30 p. m.; but it has worked as much as 24 hours a day during heavy traffic seasons.

The best day recorded (up to April) was 52 trips or 26 roundtrips. The average is about 16 roundtrips. The controlling factor is the amount of freight the railroad has available to carry across the straits.

SAFE has four Bristol 170s and 15 pilots who average 800 hours flying each year. The company has a total of 93 employees. After railroad demands are met, the equipment is used for all manner of other charter operations.

At present, the freight movement between the islands is by rail to a siding, shunting the Cargon loads onto trailer-trucks, delivered to the airports (five miles on one side and seven on the other), and back onto the railway cars. The trucks are also "Cargonzied," permitting far greater utilization of the rolling stock and, at the same time, helping SAFE maintain a fully integrated operation within the time allotted.

But plans are under way to build railroad spurs to the airports, thus eliminating the use of trucks. Then the Cargons would move directly from railroad car to airplane.

I had flown from Auckland to Wellington, the capital, the day before my SAFE visit. O'Connell picked me up early in the morning and drove me through the mountains surrounding the capital to the little railroad station of Paekakariki about 25 miles north of the city.

It looked like any other railway freight depot with the customary freight shed separating the rail siding and the dock for trucks. About a half-dozen rail-hands were taking freight out of a series of freight cars which had come overnight from Auckland up north and were loading the freight on the Cargon Pallets. (Some shipments are preloaded at Auckland, but much of it is handled as described.)

One of my first questions was how the men determined weights and loading for center of gravity on the airplane.



The answer is that the weight of each piece of freight is clearly marked on the waybill and that the loaders follow general instructions not only for the total weight on each Cargon but on positioning heavy pieces. Evidently with a Bristol freighter it isn't necessary to be too meticulous about center of gravity. There was no weighing of the Cargons or anything like that. It was obvious that the loading followed general patterns.

If the Bristol freighter has just arrived with a load, an empty transverse moves up first to take off the load, then moves down the rails to make way for the loaded transverse. In the meantime the arriving load is ready to be moved immediately onto a trailer truck. It is a simple operation that can keep both airplanes and trucks busy.

SAFE has also developed a fuel-loading apparatus that makes refueling possible within the 10-minute stop.

While the transverse (see photo) moves in and out of place in front of the airplane, a high platform moves on its own rails alongside the wing. A hose connected with remote underground storage tanks runs up to the top of the platform and a worker simply steps on the wing with the fuel hose and fills the plane tanks with minimum of fuss

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or time. No movable fuel trucks are needed.

I flew with Capt. C. G. Fantham and Co-pilot Roy McKenzie and a full load from Paraparaumu to Woodbourne Airport on the south island, five miles from the rail depot at Blenheim, and saw the full operation there both at the airport and the railhead.

In general the Cargons are loaded in pairs. Then a tarpaulin is put over the top and ropes are used to tie all of the pieces tight. It is a simple operation taking only a minute or two. Then the two Cargons were simply pushed on to the trailer of a truck. No room to spare, just fitted neatly.

Several times I witnessed one man using one hand to push more than six tons of freight onto a truck—and pull six tons off with apparent ease. I even tried it myself.

How transverse works

From the railway siding to the airport at Paraparaumu is seven miles. When the trailer-truck arrives at the airport it backs up to the transverse, best understood by looking at the photos. The transverse is easily adjustable up or down (but not fore and aft), so an operator simply matches the transverse platform to the trailer and one man rolls the Cargons onto the transverse.

The transverse handles four Cargons and so does the Bristol, but the trailer truck handles only two at a time. The Cargons were designed to utilize every bit of fuselage space in the Bristol.

Next step is to have the Bristol freighter taxi up to its precise position, the plane wheels merely sinking into a slight depression. The huge forward doors are opened—a simple and rapid operation—to expose the Bristol's hold, which is 32 ft. long, 7 ft. wide and 6½ ft. high. Then the transverse moves along its own rails under its own power to a position directly in front of the airplane.

An operator matches the transverse platform level with the airplane floor and the Cargons are slid into the airplane. Since the Bristol floor slants downward, there is a hook on an endless chain on the transverse that controls the Cargon movement into and off the airplane.

The Cargon has been best described by someone who said it was like sliding an ice-tray into a refrigerator. But it is, in fact, a wheeled tray that rolls very easily.

Loss, damage reduced 81%

SAFE says that loss and damage to airfreight has been reduced by 81% from what it was on the rail-sea-rail journey.

I asked about the shipper. Does he specify the air or sea transfer and what does he pay for the air trip?

It seems to be a very simple matter in New Zealand. SAFE has nothing to do with it.

The railroad handles shipping orders from start to finish. When a shipper in Auckland has a half dozen refrigerators going to Christchurch on the

PAA's first two Boeing jet Stratoliners



WING AND FORWARD FUSELAGE of Pan American World Airways' first Boeing 707 jet airliner have been mated (background) and work is well under way on the second. Rollout is expected in October, first flight by December. PAA has 23 on order. Total of 151 have been ordered by 13 airlines. Deliveries are scheduled late in 1958.

south island, he notifies the railroad. It is actually cheaper to send the refrigerators by rail-air-rail than rail-sea-rail, although there are items such as coal, etc., which would move at rather prohibitive cost by air.

The shipper has a choice and in some instances the sea connection is cheaper. But the bulk of all general freight shippers choose air. There are two rates and the shipper makes his choice and the shipment is then handled in exactly the same way as if the entire journey were by rail.

A refrigerator delivered to the rail terminal in Auckland up to 4 p.m. on a Monday is shipped by rail overnight to the siding north of Wellington, is flown during the day to Blenheim, the airport on the south island, then trucked (still on the Cargon) to the rail siding five miles away. It reaches Christchurch next morning, within a total of 36 hours. Before the air transfer, the time element was double that. And, by air the cost is no more.

Many side effects

SAFE had 84 Cargons in service last spring but another 72 were on their way. Preloading at faraway points has become more customary with the result that SAFE finds that its Cargons begin to get as widely distributed as freight cars.

There have been many side effects of SAFE. For example, 26,000 dozen eggs a week are flown from the south island to the northern markets with negligible breakage. Previously damage was running at 15%.

A big fruit market has been developed from south to north. Fruit is picked early in the morning down south and flown out at 9 a.m. to Wellington

for that day's market. But part of the shipment is put on the railroad for overnight delivery in Auckland, with the result that the public is getting tree-ripened fruit for the first time.

SAFE also transports a lot of motor cars. Just as Silver City Airways operates across the English Channel, SAFE loads cars within a matter of a minute or two and whisks them from one island to another.

Cook Strait separating New Zealand's two islands is not only turbulent but produces about the most consistently high turbulence in the air of any similar place in the world. It makes for notoriously bad flying conditions. Yet SAFE has never had a single bit of cargo break loose.

The airplane fatigue factor is such, however, that the government has placed an accelerometer on one of the Bristols for a comprehensive statistical recording of the turbulence factor.

Worldwide possibilities seen

O'Connell hopes to sell his idea to the rest of the world. Co-holder of patent rights with him is Ralph Trimmer. Capt. R. B. Hamilton is operating manager of the company and John R. Coulson is chief engineer. J. Sawers, chairman of directors, is former general manager of New Zealand Railways.

Major stockholder in the operating airline—but not the Cargon rights—is Airwork, Ltd., of Britain. Airwork handled the financing of the four Bristols and thereby got a stake in the airline.

U.S. rights to the Cargon system are held by Cargon Transport, Inc., 1625 Eye Street, N.W., Washington, D.C. Col. Robert W. Johnson is president.

Summary of U.S. airline traffic for May, 1957 vs. May, 1956

Compiled by American Aviation Publications from Official C.A.B. Data

Airlines	Revenue Passengers			Revenue Passenger Miles (In Thousands)			Total Ton-Miles Rev. Traffic			% Available Ton Miles Used	
	1957	1956	% Change	1957	1956	% Change	1957	1956	% Change	1957	1956
DOMESTIC											
American	668,367	688,794	-3.0	434,388	403,459	7.7	51,760,341	46,456,328	11.4	58.6	58.6
Braniff	172,932	154,642	11.8	72,787	60,886	19.5	7,896,963	5,993,390	31.7	48.9	54.2
Capital	345,490	252,830	36.8	133,052	96,049	38.6	13,758,834	8,953,605	53.7	46.5	45.0
Continental	69,609	59,259	17.5	29,403	21,060	39.6	3,115,385	2,243,465	38.9	42.0	46.1
Delta	226,215	201,646	12.2	108,409	92,599	17.1	11,803,114	10,102,254	16.8	57.2	55.8
Eastern	652,279	606,772	7.5	351,334	292,560	20.1	36,898,362	32,028,202	15.2	41.9	46.8
National	110,104	103,073	6.8	66,488	68,068	-2.3	7,271,633	7,647,230	-4.9	49.9	68.8
Northeast	56,073	48,709	15.1	14,844	9,707	52.9	1,520,672	938,163	62.1	40.9	56.3
Northwest	116,467	112,173	3.8	79,769	72,185	10.5	9,167,872	8,288,444	10.6	48.5	47.7
TWA	384,665	353,703	8.7	291,296	267,399	8.9	32,075,078	29,065,386	10.4	58.0	59.3
United	525,513	529,790	-0.8	383,435	361,283	6.1	45,060,465	41,945,558	7.4	55.1	56.3
Western	109,774	88,299	24.3	53,157	41,511	28.1	5,689,693	4,447,140	27.9	54.5	55.8
TOTALS	3,437,488	3,199,890	7.4	2,018,364	1,776,746	13.6	226,018,442	198,709,165	13.7	52.9	54.5
TERRITORIAL SERVICE											
Caribair	17,355	12,415	39.8	1,206	928	30.2	130,567	86,680	50.6	56.4	49.3
Hawaiian	29,377	33,734	-12.9	4,444	5,059	-12.2	517,562	571,327	-9.4	37.3	37.2
Trans. Pac.	14,000	14,164	-1.2	2,041	1,795	13.7	174,946	151,598	15.4	56.2	49.3
INTERNATIONAL											
American	10,941	9,893	10.6	7,379	6,300	17.1	1,103,549	950,853	16.1	58.6	62.1
Braniff	3,279	2,644	24.0	7,331	5,763	27.2	898,201	746,119	20.4	48.6	52.5
Delta	5,655	4,404	28.4	6,735	5,285	27.4	813,214	596,112	36.4	52.8	46.9
Eastern	21,747	15,941	36.4	30,994	22,477	37.9	3,331,675	2,523,402	32.0	52.6	50.1
San Juan	3,909	.....	.....	3,076	.....	.....	319,463	.....	.....	47.8	.....
National	5,830	7,989	-27.0	3,903	4,544	-14.1	451,887	508,350	-10.3	37.2	45.1
Northwest	10,510	11,101	-5.3	21,515	19,435	10.7	4,050,880	3,905,922	3.7	64.3	66.1
Hawaiian	694	.....	.....	1,810	.....	.....	236,828	.....	.....	38.1	.....
Panagra	11,662	11,838	-1.5	13,173	13,581	-3.0	1,869,823	1,877,300	-0.4	55.6	57.8
Pan American	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lat. America	92,069	88,189	4.4	98,409	82,617	19.1	13,517,914	11,441,679	18.1	59.6	55.6
Atlantic	98,006	92,424	6.7	139,982	108,286	29.3	17,804,878	14,047,394	26.7	63.2	64.1
Pacific	22,781	22,677	0.5	91,370	69,671	31.1	11,956,412	9,961,585	20.0	64.5	68.2
Portland/Seattle-Honolulu	1,164	.....	.....	3,289	.....	.....	395,739	.....	.....	33.2	.....
Alaska	6,628	7,234	-8.4	7,263	8,683	-16.4	1,059,617	1,373,065	-22.8	49.1	57.4
TWA	23,275	26,918	-13.5	57,926	64,991	-11.5	7,648,643	8,440,576	-9.4	73.4	73.8
United	6,968	7,393	-5.7	17,471	18,366	-4.9	1,978,961	2,091,145	-5.4	57.6	60.1
TOTALS	323,860	308,645	4.9	506,529	429,999	17.7	66,805,117	58,462,002	14.3	61.5	62.2
Eastern Bermuda; Northwest, Hawaiian and PAA's Portland/Seattle Honolulu figures shown for information only. NWA Hawaiian and PAA Honolulu figures not added into industry total—local carrier total includes the figures.											
LOCAL SERVICE											
Allegheny	40,791	36,530	11.7	8,798	6,018	44.5	691,090	603,725	14.5	45.5	45.0
Bonanza	11,699	11,535	1.4	2,555	2,455	4.1	258,013	244,002	5.7	42.1	40.8
Central	10,718	11,663	-8.1	2,086	1,853	12.6	213,326	189,543	12.5	31.3	33.1
Frontier	17,396	16,266	6.9	4,691	4,258	10.2	548,336	498,437	10.0	56.6	56.6
Lake Central	NR	12,889	.....	2,411	1,956	23.3	245,196	189,736	29.2	41.8	37.8
Mohawk	NA	33,483	.....	NA	5,984	.....	NA	596,951	.....	NA	56.0
N. Central	54,458	46,870	16.2	8,883	7,102	25.1	893,681	724,633	23.3	49.2	44.7
Omaha	36,090	27,860	29.5	5,999	4,278	40.2	617,170	429,711	43.6	43.3	39.1
Piedmont	37,380	36,262	3.1	7,713	6,839	12.8	782,815	694,953	12.6	53.5	56.1
Southern	19,142	16,399	16.7	3,356	2,902	15.6	339,974	299,854	13.4	37.1	43.8
Southwest	27,900	24,147	15.5	5,926	4,008	47.9	587,354	460,795	27.5	49.7	43.4
Trans-Texas	21,389	18,479	15.7	4,799	4,170	15.1	506,214	438,789	15.4	37.0	37.1
West Coast	22,720	19,812	14.6	3,965	3,409	16.3	391,104	319,116	22.6	46.3	50.4
TOTALS	299,683	312,195	-4.0	59,182	55,830	6.0	6,074,275	5,690,245	6.7	....	45.7
HELICOPTER SERVICE											
Chi. Helicopter	3,709	.....	.....	53	.....	.....	7,989	2,694	196.5	34.7	44.2
Los Angeles	3,370	2,067	65.0	102	60	70.0	15,606	11,770	32.6	58.3	50.8
N. Y. Airways	6,981	3,765	85.4	126	71	77.5	16,238	9,637	68.5	41.3	63.8
NR—Not Reported on Form 41. NA—Not Available.											
ALASKAN SERVICE											
Alaska (System)	5,442	4,393	23.9	1,980	1,612	22.8	665,464	743,700	-10.5	43.6	45.4
Alaska Coastal	4,725	4,421	6.9	420	415	1.2	51,215	50,864	0.7	62.3	67.3
Cordova	2,004	1,461	37.2	599	333	79.9	291,342	162,683	79.1	48.2	53.4
Ellis	5,319	5,157	3.1	347	291	19.2	40,212	34,957	15.0	67.8	62.8
N. Consolidated	1,635	1,290	26.7	582	466	24.9	156,331	286,940	-45.5	59.1	74.8
Pacific Northern	9,558	11,422	-16.3	9,240	8,992	2.7	1,390,136	1,359,899	2.2	63.1	63.3
Reeve	872	796	9.5	643	378	70.1	112,438	88,163	27.5	39.9	52.2
Wien	1,928	2,377	-18.9	660	1,073	-38.5	558,049	1,280,679	-56.4	85.5	85.5
TOTALS	31,483	31,317	0.5	14,471	13,564	6.7	3,265,187	4,007,885	-18.5	52.6	....

FACILITIES

Cooper Development Corp. is doubling its plant facilities to keep pace with increased activities in design and production of high-altitude research rocket devices, meteorological rockets, infra-red equipment, special missile assemblies at Monrovia, Calif. Empire Devices is moving from Bayside, L. I., to Amsterdam, N. Y., where a new

plant has been purchased. Operations will resume in August.

Beckman Instruments, Inc., has formed a new systems division to permit expansion of engineering and marketing programs. Headquarters of the new division is at Anaheim, Calif.

Raytheon Manufacturing Co. will add 20,000 sq. ft. to its Maynard, Mass., laboratory to keep pace with increased demand for airborne electronics equipment.

Leland Electric Co. Division of American Machine & Foundry Co. has moved

engineering and sales for aircraft products to Vandalia, Ohio. All manufacturing from the company's Dayton plant will be transferred within the next few months.

Sperdy Utah Engineering Laboratory is adding a 100,000-sq.-ft. unit containing a manufacturing area, environmental test area and utility area.

Avion Division of ACP Industries, Inc., has completed consolidation of its New Jersey headquarters facilities with the occupancy of a third building in Paramus Industrial Park.

How to break in your secretary

by Eric Bramley

THIS SOUNDS like a good idea, worthy of special mention. Eastern Air Lines' Washington office reasoned that it would be well if girls who were going to secretarial schools received some instruction in how to make airline reservations for their future bosses. Strayer Business College was interested and gave EAL two 50-minute periods in which to enlighten the students. Instruction was given in how a reservation is made, what information the airline needs, what information to get from the boss, etc. EAL then took the class to the airport for a tour of reservations ("here's what happens when you call"), the ticket counter ("here's how the boss checks in"), and a quick trip through an airplane. Value of the instruction was very evident when it was discovered that only 25% of the girls had flown—yet they were to be expected to know how to make reservations. Strayer is very happy and so is EAL, because the secretaries will remember its name. Much credit for the program goes to Ed Peterson, of EAL's Washington sales office.

Another milestone has been passed. TWA has dropped "tourist" and adopted "coach" as the description of its low-fare domestic service. This means that there is uniformity—every domestic airline now uses "coach" or some variation thereof—aircoach, etc. "Tourist" is used only for international flights.

Some idea of the reservations job that the airlines have on their hands—and the chances for error—can be seen from the following United Air Lines statistics: last year UAL's 1,650 reservations agents and 400 ticket agents received 12 million phone calls and 36 million telegraph messages in accommodating 6,266,000 passengers. Reservations were made not only by customers but by some 52,000 representatives of other airlines and travel agents all over the world. Because of cancellations and changes of schedules by passengers, twice as many passengers regularly make reservations on a given flight as will actually fly on it, UAL says, adding: "As the airline network has become larger and volumes have grown, exposure to human error has increased." Interesting that this information was contained in an article in UAL's *Mainliner*, a publication distributed to passengers aboard its planes. UAL is frank in admitting its mistakes.

PEOPLE: Sorry to see two old friends leave the airlines. Andy Diddel, Eastern's capable sales manager for New York City, joins Kudner Agency Inc., New York. He'll be account manager for Pan American's cargo advertising . . . W. J. "Red" Bell, Northwest's well-known Chicago sales manager, has resigned and will enter another business in St. Paul . . . Congratulations to George Enell, who's celebrating his

20th anniversary as a photographer at New York City's airports. George started on his own two decades ago, taking pictures of celebrities for airlines, and now heads Aviation News Pictures Inc., at New York International Airport. He has 15 people turning out pictures, captions, releases, etc. . . .



SELF-POWERED canopied ramp has been manufactured by Bil-Jax Inc., Archbold, Ohio, for use with Continental Air Lines' DC-7Bs. Ramp is operated from the upper platform and raises, lowers and extends by hydraulic power. Battery-operated electric motor furnishes power to wheels. Toggle positioners hold ramp stationary when desired. Canopy is made of plexiglas.

Sales, Traffic, Promotion

Domestic airlines have put their new reconfirmation program into effect. With one exception, reconfirmation applies when the passenger makes an overnight stop. When the passenger travels from one city to another, whether by air or by other means, and stays overnight or longer, he must reconfirm his reservation before continuing his trip by air or returning by air. The exception is when a stopover of less than 12 hours is involved, even though the stopover is overnight. The 33 no-show penalty plan becomes effective Sept. 15. . . .

Northeast Airlines is now advising all persons telephoning for reservations that they can mail checks or money orders and get their tickets by return mail. NEA says that at present about 20% of its business is conducted through the mail. It wants to increase the figure to 50%. Company is also considering a system whereby passengers can pay the mailman for their tickets. . . .

United Air Lines featured its airborne radar facilities in a campaign

which began earlier this month in 51 daily papers in New York, Boston, Chicago, Los Angeles, San Francisco and 20 other cities. Copy identified UAL as the "world's largest user of airline radar." . . . UAL is now using its first singing commercial on radio. . . .

Northwest Airlines ad stresses advantages of using airplane instead of car for family vacation. Cites cost of Chicago-Seattle roundtrip by auto as \$632.16 for a family of four, against \$501.60 by air coach, a saving of \$130.56 "plus 12 days vacation time." Advises families to rent cars on arrival. . . . NWA is refurbishing interiors of its Stratocruisers as they come through the St. Paul overhaul base. Seats are being recovered, new curtains installed, new carpets laid, etc. Interiors will match those of NWA's DC-6Bs and DC-7Cs. Cost is about \$12,000 per plane. . . .

TWA has developed a special Jetstream insignia which is now being painted on the outer stabilizers of its new planes. Insignia consists of a golden pennant flowing around a blue globe. It will also

be used in advertising and promotion, and will be painted in color on interior bulkheads. . . .

Western Air Lines has renewed its contract to sponsor the Virgil Pinkley news program on Mutual-Don Lee Broadcasting System. . . . WAL has a Spanish language version of its Los Angeles-Mexico City schedules, for distribution in Mexico and other Latin American countries. . . .

Frontier Airlines is distributing a new pamphlet, "Best Way to Travel the West." Contains information on FAL fares, services, personnel, maintenance, equipment, etc. . . .

Piedmont Airlines featuring 350th anniversary of Jamestown, Va., in direct-mail piece. . . .

American Airlines plans to establish a sales office in Manila in the near future. Company now has off-line Pacific area sales offices in Tokyo and Honolulu. . . . traffic. . . . Central Airlines has started service to Harrison, Ark., with two roundtrips daily in each direction six days weekly and one on Sunday. . . .



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Each walk down the welcoming carpet is as exciting as your first. You enter a world of luxury: beautifully decorated interior, roomy seat, delicious full-course meal, inviting lounge that's yours to enjoy. Only United offers Red Carpet® Service, on DC-7s, nation's fastest airliner. No extra cost. Enjoy other Mainliner® exclusives, too — especially the smoothness and on-time dependability of the world's largest radar fleet. United Air Lines does so much to make your travel easy.

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TRANSPORT TRENDS

Increase in jet and turboprop engine prices may hit airlines with equipment now on order. Reason: military curtailment of production of models that parallel commercial engines will cut into volume figures on which initial jet pricing was based.

In the past, aircraft manufacturers have absorbed minor engine price changes. But in this case, escalator clauses in contracts probably would be exercised and price changes passed along to the customers. Assuming a 5% escalation applied to a \$200,000 engine, aircraft builders would not be inclined to absorb a \$10,000 per engine (\$40,000 per aircraft) boost in price.

One of the best safety records in history is being compiled by U.S. domestic and international scheduled airlines. And it's being compiled in the face of such "insurmountable" problems as vanishing airspace, antiquated ATC facilities, etc. When 117-passenger fatality toll of Grand Canyon accident was dropped from "last 12 months" record on June 30, domestic-international fatality rate became 0.09 per 100 million passenger-miles. The 1956 figure, considered good, was 0.64, or seven times higher than present 12-month rate.

White House is said to favor CAB's reported vote for Eastern Air Lines in the New York-Mexico City Nonstop Case. Timing of final decision is still uncertain, but comparable award to Aeronaves de Mexico won't clear U.S. procedural steps until at least early August.

Although CAB refused airline requests to bar its staff from deliberations in the Suspended Passenger Fare Case, indications are that staff members (who oppose the 6% increase) will quietly sit out the Board's final deliberations. The agency has promised the carriers "fair play."

No early resumption of bilateral air talks between the U.S. and Belgium is expected. Negotiations were suspended after five days of Washington sessions. U.S. is seeking nothing and opposes revision of the existing agreement. Belgians want Sabena's routes extended to the U.S. west coast.

For some reason, yet to be explained, CAB has set itself up as the No. 1 source for "scare" statistics on air traffic near-misses. Although CAB's initial report on the subject, issued after it set up a cooperative industry reporting system, may have been justified, subsequent reports are no more than carbon copies that contribute nothing to solution of a complex aviation problem. Most recent edition, circulated to newspapers and wire services, reports 5,200 passengers were aboard 331 "near-miss" flights during past three months, compared with 4,500 passengers and 452 flights for previous 90 days.

There's some opposition in the House to the bill setting up a three-man Airways Modernization Board. But there probably aren't enough opponents to block passage. Reps. John E. Moss (D-Calif.) and John D. Dingell (D-Mich.), in a sharply-worded minority committee report on the Senate-passed bill, charged it would add a "new layer of bureaucracy" without solving the air traffic control problem. They spotlighted what they said was Commerce Secretary Weeks' reluctance to surrender control of CAA and wanted to know "why it is necessary to defer for three years the establishment of a federal aviation agency" proposed by Edward P. Curtis.

Although he keeps well in the background, George Spater, long-time attorney for Trans World Airlines, is actually one of the major powers behind the airline.

INDUSTRY

Transatlantic passenger traffic shows 27.5% gain in first half of '57; westbound business booms

by Eric Bramley

A SURPRISING 27.5% GAIN in transatlantic passenger traffic was registered in the first six months of 1957 over the same 1956 period by 14 U.S. and foreign airlines, according to preliminary figures compiled by AMERICAN AVIATION.

Principally responsible for the increase was a tremendous 73.9% jump in tourist traffic westbound from Europe to the U.S. and Canada.

If the present gains hold, the airlines are on the way to the first one-million-passenger year in their history.

A total of 413,764 passengers crossed the Atlantic both ways on scheduled flights between the U.S.,

Canada and Europe during the first half of 1957, against 324,462 in the same 1956 period. Between the U.S. and Europe, both ways, 360,666 passengers were carried, a 25.9% gain over 1956.

An even bigger jump was shown in Canada-Europe services—from 38,038 to 53,098, up 39.6%. These totals may be subject to slight change when final figures are available. Passengers carried on charter flights are not included.

A substantial increase was also shown in cargo traffic. Tonnage reached 10,358, up 28.7% from 8,046. U.S.-Europe registered a 31.7% in-

crease, from 7,279 to 9,587. There were 800 all-cargo flights against 533, a 50.1% gain, reflecting in part the inauguration of scheduled all-cargo service by Seaboard & Western Airlines. S&W started scheduled operations in April, 1956, but its first-quarter results for that year are not included in the 1956 six-months' totals.

While eastbound tourist passenger traffic increased only 13.4%, westbound jumped 73.9%. Three factors were responsible for the demand for westbound seats: (1) emigrant fares, offering a 40% reduction; (2) the Hungarian revolt; (3) the Egyptian conflict.

Of these, the first was the most important. A large number of emigrants were traveling between Europe and Canada, traffic experts say. On direct flights between Europe and Canada, the tourist increase was 86.4% against 71.6% between Europe and the U.S. Because the Canadian flights were often at 100% load factor, numerous emigrants traveled through the U.S. to Canada. Reduced fares for this traffic did not become effective until Nov. 1, 1956.

Because of the 40% fare reduc-

Summary of transatlantic passenger traffic, first half of 1957 vs. first half of 1956

	U.S.-Europe			Canada-Europe			Total		
	1957	1956	% Change	1957	1956	% Change	1957	1956	% Change
Eastbound									
1st Class Flights	785	998	(21.3)	3	15	*	788	1,013	(22.3)
Tourist Flights	1,292	1,401	(7.8)	38	3	*	1,330	1,404	(5.3)
Mixed Flights	2,479	1,849	34.1	485	414	17.1	2,964	2,263	31.0
Cargo Flights	417	259	61.0	2	1	100.0	419	260	61.1
1st Class Seats	73,518	72,758	1.0	6,188	6,276	(1.4)	79,706	79,034	0.8
Tourist Seats	195,972	165,837	18.2	27,249	20,650	32.0	223,221	186,487	19.7
TOTAL	269,400	238,595	12.9	33,437	26,926	24.2	302,927	265,521	14.1
1st Class Passengers	49,696	49,666	0.06	3,602	4,104	(12.2)	53,298	53,770	(0.9)
Tourist Passengers	129,552	115,095	12.6	18,092	15,121	19.6	147,644	130,216	13.4
TOTAL	179,248	164,761	8.8	21,694	19,225	12.8	200,942	183,986	9.2
Cargo (tons)	4,491.2	3,137.6	43.1	235.9	232.5	1.5	4,727.1	3,370.1	40.3
Westbound									
1st Class Flights	798	968	(19.2)	6	16	*	804	1,004	(19.9)
Tourist Flights	1,260	1,312	(4.0)	84	4	*	1,344	1,316	2.1
Mixed Flights	2,430	1,848	31.5	477	411	16.1	2,907	2,259	28.7
Cargo Flights	381	272	40.1	0	1	(100.0)	381	273	39.6
1st Class Seats	74,028	72,013	2.8	6,103	6,334	(3.6)	80,131	78,347	2.3
Tourist Seats	193,911	160,447	20.8	30,131	20,482	47.1	224,042	180,929	23.8
TOTAL	267,939	232,460	15.3	36,234	26,816	35.1	304,173	259,276	17.3
1st Class Passengers	42,915	40,967	4.7	3,862	4,036	(4.3)	46,777	45,003	3.9
Tourist Passengers	138,503	80,606	71.6	27,542	14,777	86.4	166,045	95,473	73.9
TOTAL	181,418	121,663	49.1	31,404	18,813	66.9	212,822	140,476	51.5
Cargo (tons)	5,096.0	4,141.0	23.1	534.9	535.4	(0.09)	5,630.9	4,676.4	20.4
Both Ways									
1st Class Flights	1,583	1,966	(20.3)	9	31	*	1,592	2,017	(21.1)
Tourist Flights	2,552	2,713	(5.9)	122	7	*	2,674	2,720	(1.7)
Mixed Flights	4,909	3,697	32.8	962	825	16.6	5,871	4,522	29.8
Cargo Flights	798	531	50.3	2	2	..	800	533	50.1
1st Class Seats	147,546	144,771	1.9	12,291	12,610	(2.5)	159,837	157,381	1.6
Tourist Seats	389,883	326,284	19.5	57,380	41,132	39.5	447,263	367,416	21.7
TOTAL	537,429	471,055	14.1	69,671	53,742	29.6	607,100	524,797	15.7
1st Class Passengers	92,611	90,633	2.2	7,464	8,140	(8.3)	100,075	98,773	1.3
Tourist Passengers	268,055	195,791	36.9	45,634	29,898	52.6	313,689	225,689	39.0
TOTAL	360,666	286,424	25.9	53,098	38,038	39.6	413,764	324,462	27.5
Cargo (tons)	9,587.2	7,278.6	31.7	770.7	767.9	0.4	10,357.9	8,046.5	28.7

NOTE: Cargo tonnage is the total carried on all-cargo and passenger flights.

NOTE: Parentheses denote decrease.

* More than 100% change.

tion, the carriers' revenues will show a much smaller increase than their traffic.

The first half of 1957 showed: First-class and tourist flights continued to decrease, while mixed flights increased 29.8%.

There was little growth (1.3%) in first-class passengers. Tourist increase, both ways, was 39%. First-class seats offered for sale increased only 1.6% while tourist seats rose 21.7%.

Eastbound first-class load factor fell from 68.03 in 1956 to 66.87 this year. Tourist dropped from 69.82 to 66.14. Total load factor was off from

69.29 to 66.33. Westbound, first-class gained slightly from 57.44 to 58.37. Tourist took the big jump, from 52.77 to 74.11, and the total increased from 54.18 to 69.97. Both ways across the Atlantic, load factors were: first-class, down from 62.76 to 62.61; tourist, up from 61.43 to 70.13; total, up from 61.83 to 68.15.

U.S.-Europe carriers are Pan American, TWA, Air France, Luft-hansa, BOAC, El Al, Iberia, KLM, LAI, Sabena, SAS, Swissair and S&W (all-cargo).

Canada-Europe carriers are Trans-Canada, Canadian Pacific, KLM and BOAC.

Engineer shortage eases in aircraft industry but not for all types or all companies

The demand for engineers in the aircraft industry is decreasing, but the search for good, creative designers goes on.

"We never seem able to get caught up on designers," said E. H. Heine-mann, chief engineer of the Douglas Aircraft Co.'s El segundo Div.

Almost all aircraft companies have open requisitions for engineers because of the need for skilled and specialized technicians, but total numbers are down. Northrop Aircraft, for example, has, of a recent date, had open requisitions for 100 engineers. This compared with 190 a year ago. On the same day, AiResearch Manufacturing Div. of Garrett Corp. reported open requisitions for 40 engineers as compared to 75 the first part of this year.

Companies on the upgrade, like Marquardt Aircraft Co., moving toward production of ramjet engines for the Bomarc missile, find the engineering supply still critical.

"If you want good, experienced engineers, it's still a tough market," said a Marquardt spokesman.

Marquardt has requisitions out for 393 engineers for fiscal 1957-1958. This will bring its total engineering force up to nearly 1,000.

Aside from North American Aviation, where the recent cancellation of the "Navaho" caused a major lay-off, aircraft companies in the California area report no more than minor reductions in engineering staffs. Northrop, for example, with an engineering department totaling 4,000, says it plans no layoffs. It reports it is continuing to hire qualified engineers.

California Div. of Lockheed Aircraft Corp., with 3,000 engineers in an engineering department totaling 6,000, says its turnover and hiring rates both have been stable over the last six months, and expects this situation to continue.

Douglas Aircraft Co., with engineering employment at an all-time peak, has terminated "a few" people recently. They were described as "bottom-of-the-stack" people. Douglas con-

tinues to hire engineers for its missile division and for commercial activities (DC-8), and finds the shortage most critical in two fields: electronics and aeronautics.

Hiring in engineering began to taper off at the San Diego Division of Convair six months ago. Convair spokesman said that the company had been studying engineering personnel needs, particularly with regard to the less skilled people, and there may be some slight reduction in the engineering force as a result.

Convair said it was not recruiting as extensively as it had been in the past, but that it was still recruiting and still sending teams to universities in the search for promising talent. These teams, however, are now being more selective in their choices.

While they expect the demand for creative designers to continue as strong

U.S. dollars lose value on Canadian airlines

U.S. money is no longer accepted at par for payment of airline fares in Canada, but now has to stand the going rate of exchange.

The Canadian Air Transport Board ordered that after July 22 all fares collected in Canada or payable later in Canada shall be paid in Canadian currency or "alternatively, in any other currency acceptable to the carrier in an amount equivalent to the collectible Canadian dollar amount."

Past practice had been to list fares and freight rates in the same amounts for either Canadian or U.S. dollars. The Canadian dollar is currently listed at between \$1.04 and \$1.05 U.S.

as ever, aircraft engineering executives anticipate some decline along systems lines. With requirements constantly changing and airplanes getting more complicated, plus the advent of the guided missile, systems studies became very popular in the weapons field. Economy cutbacks, it is felt, will reflect in less effort in this direction.

Effects of economy already have begun to take their toll of what, for several years, has been a sizeable recruitment advertising program by industry. This "new look" at recruitment advertising, however, doesn't stem from any major change in the engineering manpower situation.

Instead, it is an outgrowth of direct expressions by military services that allowable advertising costs for recruitment will come under closer scrutiny, presumably as the result of criticism earlier this year by Congress.

Eastern meets Western—at Mexico City



Who would have thought 20 years ago that if and when Eastern Airlines ever connected with Western Airlines the junction point would be Mexico City? But that's what has happened as a result of the bilateral with Mexico.

Western got the jump on Eastern by eight days, but the two airline chief

executives—Capt. E. V. Rickenbacker (left), chairman of Eastern, and T. C. Drinkwater, president of Western—were in Mexico City at the same time and were photographed together.

One unpublished item is that Western began service to Mexico July 15, Drinkwater's 49th birthday.

Vinson bill would require Pentagon to tighten up procurement procedures

House Armed Services Committee is paving the way for hearings on legislation aimed at backing up reforms urged in a recent critical report on Pentagon procurement practices.

The bill was introduced by Rep. Carl Vinson (D-Ga.) on the heels of the Hebert Subcommittee report (AMERICAN AVIATION, July 15) blasting the volume of military procurement handled by negotiation.

The chairman of the full committee stressed that his bill "would tighten up and eliminate as far as possible negotiated contracts and help restore sealed, competitive bidding."

Two main provisions would:

Redefine the word "negotiate" in a way to insure open competitive bidding.

Order the Defense Secretary to institute uniform procurement rules.

Rep. Vinson's legislation would lift from the President the power to declare a national emergency and return the authority to Congress. A

provision, similarly designed, passed the House as an amendment to the military construction bill.

Under the Vinson bill, a revamped "negotiation" clause in the procurement rules would require purchasing officers to negotiate openly with potential bidders, except in the case of classified items or where the amount is less than \$1,000.

Another chief provision, and one the Hebert Subcommittee strongly urged, would require Pentagon officials to publicize all negotiated prices after a bidder has been picked.

The way it now works, Rep. Vinson said, only the successful bidder's prices are made public and "no one knows what the other bids were, how the negotiators conducted the negotiation, or whether the bidders were even consulted."

Bill restates recommendation calling for a new meaning of negotiation and uniform procurement rules largely as they were aired in the Hebert probes' report.

UAL earnings decline sharply in first half

Although traffic and revenues reached new peaks in the first six months of 1957, United Air Lines' net earnings dipped sharply from \$5,260,884 in the first half of 1956 to \$2,953,192 this year (for other earnings results, see page 45).

The 1957 profit included \$1,549,634 gain from sale of surplus aircraft, compared with \$737,271 in 1956. Without these gains, net earnings were \$1,403,558 in the 1957 first half, against \$4,523,613 last year.

Operating expenses jumped 12% to \$129,190,213 while revenues rose 5% to \$133,005,366. Passenger-miles were up 5% to 2,268,745,000. Said UAL President W. A. Patterson: "There is critical need for an increase in fares . . . CAB approval of the increase should be made as quickly as possible to prevent further deterioration in earnings."

AF reveals more details of Project Far Side

Air Force Office of Scientific Research has disclosed additional details on Project Far Side (see page 34), the balloon-plus-rocket space-probe project.

Six operational flights are scheduled starting the latter part of September. Location is some Pacific island, which is unofficially given as Eniwetok Atoll. The Atomic Energy Commission has no interest in the flights other than making its island available to the Air Force.

Project Far Side culminates a three-months' study by Aeronutronic Systems, Inc. of the space-probe prob-

lem, during which time several rocket configurations were proposed. Latest design calls for a four-stage solid-propellant rocket, 23 feet overall length, the last stage of which is expected to attain a speed of 17,000 mph and rise over 1,000 miles.

First stage comprises a cluster of four Thiokol Chemical Corp. Recruit rockets; second stage, a single Recruit; third stage a cluster of four Grand Central Rocket Co. Arrow II rockets; and fourth stage, a single Arrow II.

Topping the fourth stage will be a 3½-pound package containing instruments for cosmic ray and magnetic field studies plus a transmitter.

Weights given in first Air Force announcement are partly in error. Newly released weights are: Overall, 3,800 pounds; balloon, 1,500 pounds; rocket, 1,900 pounds, and platform, 400 pounds.

L.A. companies protest new tax assessment

Los Angeles aircraft companies have protested to the County Board of Equalization against a new assessment placed on government-owned defense inventories and tooling that triples their local tax bill.

The companies said that the levy is similar to assessments made in 1940 and 1953 and that both these were declared invalid in court. Despite the rulings, Los Angeles County has repeated the 1953 assessments in 1954, 1955 and 1956 and taxes paid under protest for those years now total about \$22 million.

In the case of one aircraft company, the 1957 assessment of \$87 million is more than five times last year's \$17 million

Facts for filing . . .

Army's airborne Indians

Army has renamed many of its aircraft with Indian titles to encourage the use of names rather than type and model designations. Here is a rundown of the new system as prepared by AMERICAN AVIATION for desk-top reference:

Bell H-13	Sioux
Bell H-40	Iroquois
Sikorsky H-19	Chickasaw
Sikorsky H-34	Choctaw
Sikorsky H-37	Mojave
Vertol H-21	Shawnee
Hiller H-23	Raven
Hiller Flying Platform	Pawnee
Cessna XH-41	Seneca
Beech L-23	Seminole
De Havilland DCH-4	Caribou
Grumman HPOA	Mohawk

The Cessna L-19 Bird Dog, De Havilland L-20 Beaver and U-1 Otter will retain their old names.

Armed Forces Management is 14th AAP publication

Acquisition of *Armed Forces Management* magazine through purchase of the Professional Services Publishing Co., Rockford, Ill., has been announced by Wayne W. Parrish, president and publisher of American Aviation Publications.

PSPC, which becomes a wholly-owned subsidiary of AAP, was formed in July, 1954, by Col. Roy B. Southworth to publish *Armed Forces Management*, with an editorial policy of providing an interchange of information between industry and the armed forces on the latest techniques and developments in the management field.

Col. Southworth will continue with AFM, and C. W. Borklund will remain as managing editor, both being located in the Washington offices of AAP. AFM becomes the 14th AAP publication.

Boundary layer control to be tested by B-57

Northrop Aircraft is preparing for boundary layer control tests with a B-57 twin-jet bomber. The B-57 will be flown with one boundary layer control wing and one conventional wing.

Northrop has been engaged in BLC research for ARDC's Wright Air Development Center for seven years. Dr. Werner Pfenninger is director of the project.

Tom Miles joins AAP

Tom Miles, director of interline reservations procedures for the Air Traffic Conference of America since 1952, has been appointed director of Air Information Services for American Aviation Publications, it has been announced by Wayne W. Parrish, president and publisher. He will join AAP in mid-August and direct its expanding program of schedule services for the airline industry.



REPUBLIC's F-105 *Thunderchief*, newest fighter-bomber of the U. S. Air Force, is one of more than forty types of turbine-powered aircraft using essential Hamilton Standard equipment. Superior engineering, research, and development, and years of experience stand behind Hamilton Standard's leadership in production for outstanding aircraft—jet or propeller driven.

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* SOURCE: FIGURES RELEASED BY
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JULY 29



WEST COAST TALK

by Fred S. Hunter

Prospects of DC-9 fade with Navy cancellation of A4D-3; report F-104A obsoletes existing records

NAVY'S CANCELLATION of the Douglas A4D-3 sets the Douglas DC-9 small jet transport farther away than ever. The El Segundo division's A4D-3 was to have incorporated an engine change from the Curtiss-Wright J65s powering present models to the new P&W J52, which the Douglas Santa Monica division had ticketed for its proposed DC-9.

Navy's termination of the contract removes this source of military experience for the engine. It may not make too much difference in the final analysis, however. Douglas shows signs these days of being willing to wait a year or so more for new engine developments promising better specific fuel consumptions. The manufacturer thinks economy-minded airlines feel the same way.

Reports are around that some new standards of performance were marked out the other day by a Lockheed F104A in executing a simulated combat mission. Performance figures are classified, but enough is known about them to indicate that, following strict military procedures, the Lockheed F-104A's accomplishments in afterburner climb, altitude and high G maneuvers obsoleted all existing records for military aircraft. On top of this the F-104A landed with 200 gallons of fuel in its tanks, whereas the chase plane had already returned to base because it had run dry.

Seems incredible, but in August the airlines will be operating in excess of 1,000 nonstop seats a day in each direction between Los Angeles and the Atlantic—counting Washington as Atlantic coast. There are now 728 nonstop seats each way between Los Angeles and New York, divided 350 on American, 202 on United, 176 on TWA. American has 205 nonstop seats daily to Washington, making a total of 932. Four days a week American operates an additional Royal Coachman trip (85 seats Los Angeles-New York, making the total over 1,000 on four days a week. The other three days will be taken care of in August when American and TWA start nonstops to Boston. Where do all the people come from?

Both Boeing and Convair have agreed to entertain Curtiss-Wright proposals for latter's TJ38 Zephyr engine

as alternate power plants for the Boeing 717 and the Convair 880. . . . Lockheed has definitely decided to offer a commercial version of the C-130 and will make the announcement shortly. . . . Aerojet-General is developing an aircraft proximity warning device in its Avionics division. . . . North American Aviation will make some changes in its Model 246 UT-X jet before it flies next spring. . . . But the real big news at North American is the announcement that the 5¢ doughnut is slated for return in the company's cafeterias. Automation is responsible for this impending achievement. Automatic machines are being installed to turn out 40 dozen an hour. They eat 72,000 a month at NAA.

Super Constellation in which Lockheed has installed four Electra engines for a 1,000-hour flight test program is an R7V-2 obtained from the Navy on bailment. Plane is ideally suited for this phase of Lockheed's testing of the Allison 501 engines, because it was built for turboprop power in the first place—P&W's T34s—and is designed structurally for a gross takeoff weight of 175,000 pounds. The Navy discontinued its test program on the R7v-2s, thus making the aircraft available for Lockheed's use.

Douglas picked off a record-breaking percentage of graduating engineers this year, indicating more interest in the aeronautical field at the college level. Got acceptances from 30% of the college graduates it offered jobs. Highest previous ratio, about 14%. On the other hand, a higher percentage of its experienced engineers than expected chose to find jobs outside aviation than take a transfer when Douglas had to cut down at Tulsa because of the C-132 cancellation.

When Ryan Aeronautical's X-13 made its first complete takeoff, transition to normal flight, and back again to the ground trailer, the operation went like clockwork and the entire sequence from start to finish was beautiful to behold. It was so impressive one observer remarked: "I never want to see another operation. Nothing can be that perfect again."

Lockheed Aircraft Service expects to have processed more than 50 WV-2s at its new Honolulu facility by the end of September.



ELEANOR AFANASIEF USES A ROBINSON . . .

Seen at McClellan Air Force Base, Eleanor is wiring an R-4360 engine — the type used on the B-36, B-50 and C-124 Globemasters. Her wire twister is a Robinson model M80 with the exclusive diagonal jaw design.

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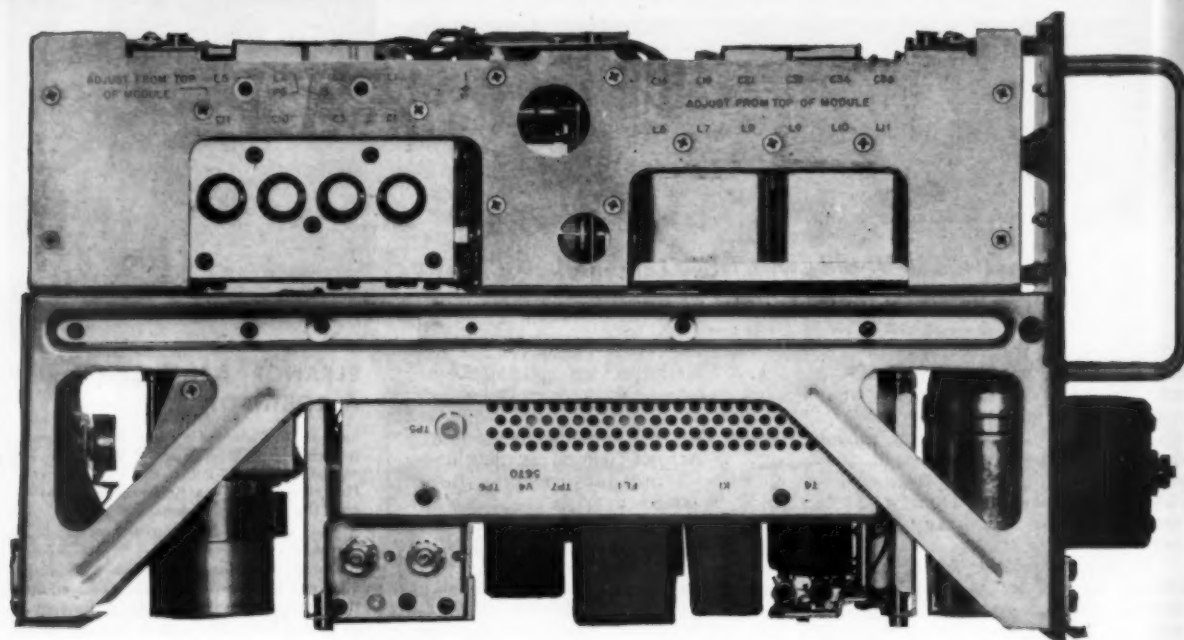
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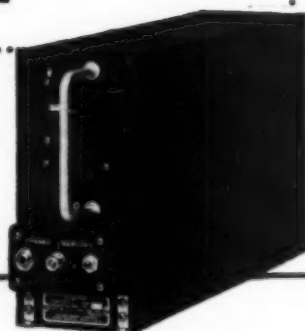


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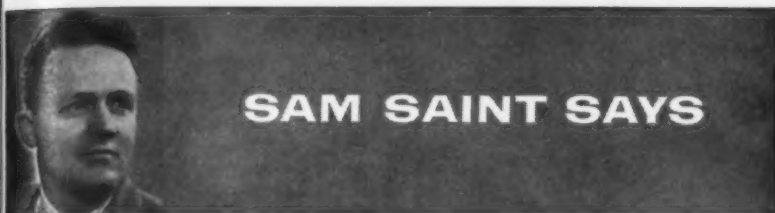
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SAM SAINT SAYS

Ernie Cutrell: Man With a Mission

MY PHONE RANG at four a. m. on a chilly spring morning in 1944. A voice on the other end said, "Let's go flying. The weather is *real* good this morning." The voice was the voice of my boss, Ernie Cutrell, then a lieutenant colonel in charge of an all-weather flight project for the Air Transport Command.

"Good weather" in Ernie's vocabulary was any meteorological phenomenon that reduced the ceiling below 200 feet and the visibility below 1/4 mile. "Poor weather" days, when ceilings and visibilities were higher, were days for continuing the endless round of knocking on doors to talk about what was learned flying on "good weather" days.

When Ernie said the weather was "real good," I knew I'd have trouble driving to the airport. It took a "follow-me" jeep to help us find the take-off runway at Mitchell Field. Visibility in the early morning darkness was about 100 yards.



CUTRELL

One compensation: We had no air traffic delay. We were promptly cleared to fly "anywhere in the New York area at any altitude!" In fact there was not another airplane in the sky for several hundred miles.

Newark was giving zero and a sixteenth of a mile. "Good, we'll go there," said Ernie. "I want you to make a few approaches. This might—this just might change your mind about double-row approach lights." This patient, let's-go-try-it-and-see attitude was typical of this tall, quiet-spoken pilot whose eyes and quick smile always betrayed deep interest in what he was doing.

Newark, at that time, had what nearly everyone else thought was the best approach light system in the world: a twin row of high-intensity light fixtures extending the edges of the runway out into the approach area. Like everyone else (who flew only in "poor weather") I thought two rows of lights were necessary for lateral reference. They sure looked good when breaking out of a 300-foot ceiling with 1/4 of a mile visibility.

Ernie and I had gone round and round on twin row versus a single, centerline configuration for approach

lights. I remember a night when we walked the streets of Gainesville, Ga., into the wee hours going back and forth over the same arguments, now and then pausing to discuss the "texture" of a neon sign down the street, or a brighter, "point-source" of light. Ernie was patient with the young man who didn't yet know how little he knew. "One of these days we'll get a spot of 'good weather'," he said, "and we'll go flying. You can't decide this by talking about it."

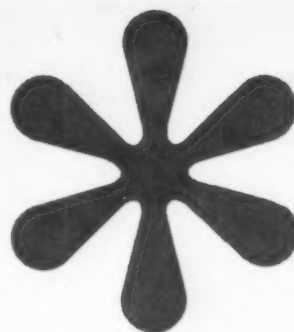
He was right. That morning at Newark I learned about approach lights by flying in weather that was "good" enough to separate sound practical answers from theoretical analysis. We made full stop landings for nearly two hours. The tower operator in his glass cage close by the runway said, "I'm convinced you are doing it by what I hear!" He never did see us until the weather turned "poor" and we taxied in for breakfast.

During the 12 long years that followed, Ernie gathered the support of one here and one there, then groups and finally the backing of the Air Line Pilots Assn. and the Air Transport Assn. until finally the single-row, center-line approach lights began to appear at major terminals. Today nearly everyone knows what Cutrell knew all those years ago. A single-row, center-line approach light system is fundamental and right—one of the major safety contributions of the past ten years.

On March 6 of this year Cutrell received the first annual safety award of the Air Line Pilots Assn. He has received other awards. Mostly people think of Cutrell and approach lights. Few realize the much broader scope of this legendary man's contributions to the progress of all-weather flight.

For example: At Newark Airport in 1934, Cutrell made 167 full-stop landings with a tri-motored Ford while flying under a canvas hood! This was only one of many milestones since Ernie began flying in 1918. His wealth of experience has been felt in countless meetings where all sorts of instrument flying projects have been gently but firmly nudged in practical directions.

Ernie's wife stood with him as the ALPA award was made. She is perhaps the only one who knows the heartbreaks Ernie suffered and the many roadblocks he climbed without receiving—or expecting—recognition.



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HONORS

Marcel Pascal of France has been elected chairman of ICAO's Air Navigation Commission, replacing Walter Bi-naghi now council president.



ANDREW B. SHEA, president of Panagra, right, and Lou Garcia, Panagra public relations director, have received American Public Relations Assn.'s silver anvil award for meritorious pubrel in the field of travel and transportation which helped stimulate trade and tourism between North and South America.

Roy T. Hurley, chairman and president, and Ronald S. Gall, director of public relations, Curtiss-Wright Corp., received official citation for their cooperation with the U.S. Air Force in "Recruiting Service and in appreciation of conscientious efforts toward the advancement of peace through Air Power."

Dennison R. Crandall, editor of the Scintillator, house organ of Bendix Aviation Corp.'s Scintilla div., was named editor of the "Editor's Notebook," official publication of the American Association of Industrial Editors.

John C. McDonald, assistant technical director of The Dow Chemical Co.'s Magnesium Dept., received the annual Willard H. Dow Memorial Award for Research in Magnesium.

Honor roll

(For 25 or more years' service in the industry)

William C. Neustrom, Trans World Airlines. Gen. foreman, sheet metal shop, Kansas City, Mo.

J. H. "Jack" Frey, Trans World Airlines. Gen. foreman, engine overhaul, Kansas City, Mo.

Carl B. Sherrick, Trans World Airlines. Lead mechanic, electrical shop, Kansas City, Mo.

Albert Steadman, Allen B. Du Mont Laboratories. Consultant in chemistry lab. for Du Mont's tube divisions.

A. John Hinck, Allen B. Du Mont Laboratories. Section head, quality assurance lab. for television picture and industrial tubes.

George Molitoris, Pratt & Whitney Aircraft. Div. supt. in Area XIV, E. Hartford, Conn.

Peter Rizauckas, Pratt & Whitney Aircraft. Engine lathe operator in D-96, E. Hartford, Conn.

Frank Flamm, Grumman Aircraft Engineering Corp. Foreman, small parts fabrication dept., Bethpage, N. Y.

Oscar Erlandsen, Jr., Grumman Aircraft Engineering Corp. Missiles projects

coordinator, Bethpage, N. Y.

R. W. Sanford, American Airlines. Captain, Ft. Worth, Texas

H. P. Miller, American Airlines. Supt. of communications, Chicago

E. I. Partain, American Airlines. Customer service agent, Cleveland

C. E. Taylor, American Airlines. Communications operator, Ft. Worth.

William R. Miller, North American Aviation. Gen. foreman, missile processing, Missile Develop. Div., Downey, Calif.

TRANSPORT CHANGES

Ralph G. Tanner, Jr., appointed asst. controller for Riddle Airlines.

John Barbour promoted to dist. mgr. of KLM Royal Dutch Airlines in New Orleans.

William A. Durr promoted to dist. sales mgr., Eastern Air Lines, for New York City.


Francis T. Tokishige named head of American Airlines office in Tokyo.

J. Merrick Fowler appointed sales mgr. for American Airlines in the Far East and South Pacific.

Rafael Enriquez Guerrero named Mexico City Central Airport mgr. for Western Air Lines.

David Anderson, TWA district sales mgr. in Hong Kong, transferred to Bangkok; Thomas B. Cavanaugh, Orient dist. sales mgr. based in Tokyo, transferred to Manila.

George Lambert, TWA dist. mgr. in Paris, France, named dist. sales mgr. in Chicago; Steward Long named dist. sales mgr. in Paris; John S. Winchell becomes dist. sales mgr. at Kansas City.

ANOTHER  ACHIEVEMENT

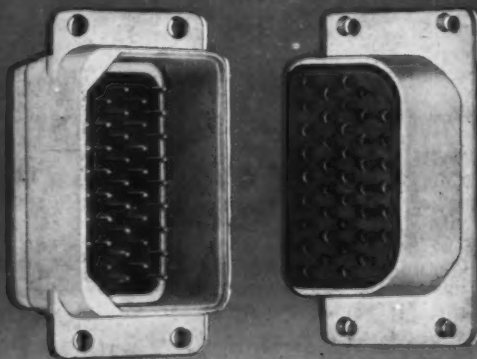
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SIDELIGHTS

Man in demand

Willis Player, who joins American Airlines in September in a top public relations post, was faced with an unusual but pleasant situation during the past few months—he was besieged with lucrative job offers.

In addition to AA, at least two other major airlines and one manufacturing firm were trying to obtain his services.

As vp-public relations of Air Transport Assn., Player sparked the industry's first long-range pubrel program—one that so impressed some of the airline presidents on ATA's board that they tried to hire him for their respective companies. C. R. Smith was successful.

On Lockheed and jets

Top brass at Lockheed Aircraft Corp. in persons of Dan J. Haughton, exec. vp, and C. L. Kelly Johnson, vp-engineering and research, sat attentively through panel discussion on jet business aircraft during recent Institute of the Aeronautical Sciences meeting in Los Angeles.

Obvious deduction: Lockheed may move in on this field. Company has high hopes its multi-engine utility transport trainer—due to fly in September—will be ordered by the Air Force.

Security squeeze-play

Pentagon declassification of Doppler self-contained navaid data was no simple gesture of kindness to commercial airlines planning jet service. It emerged under direct threat of competition from similar systems developed in Canada and abroad.

Supersonic copilot

Lt. Gen. C. S. Irvine, USAF Deputy Chief of Staff (Materiel), who has been flying since 1918, still likes to get a taste of new aircraft in AF inventory. During recent inspection tour, he left his C-54 at St. Louis to hitch a ride in a McDonnell F-101B super-

Great minds, single thought department

"With the increasing efficiency of miniaturized nuclear weapons the weight of the fuel load becomes a critical factor in performance. Conversely the defense must at all costs ensure that every bomber is intercepted well before it reaches the target, and that every interception will result in a certain kill.

"Thus each is straining to the uttermost in the performance race . . ."

J. R. Cracknell, *FLIGHT*, March 15, 1956, page 332.

"With the increasing efficiency of miniaturized nuclear weapons the weight of the fuel load becomes a critical factor in performance. Conversely, the defense must at all costs ensure that every bomber is intercepted well before it reaches the target, and that every interception will result in a certain kill. Thus, each is straining to the utmost in the performance race . . ."

From paper presented at May 13-14, 1957 chemical seminar, French Lick, Ind. by an engineer of a leading U.S. chemical corporation.

sonic interceptor to Ft. Worth for a public display of the Convair B-58.

Elapsed time for the 580-mile trip: 56 minutes. Report is Irvine was a very active "copilot" on the flight.

Expense report

Just how expensive will it be to taxi and to operate turboprop and jet transports at low altitudes? Marv Whitlock, vp-operations planning of American Airlines, comes up with some startling figures: (1) minimum cost of a missed approach will be approximately one ton of fuel; (2) fuel used during taxi and ground holding operations will cost about \$2 per minute.

Specks on radarscope

Not all airline officials are happy with penalties being paid for airborne weather radar installations. In aircraft as small as the Viscount, it sometimes displaces two passengers. For more complex installations such as on new Super Constellations, installation weight exceeds 400 pounds!

Industry talk . . .

William P. Lear, chairman of Lear, Inc. has re-established his head-

quarters at the home office in Santa Monica somewhat in advance of original plans. Lear moved his base of operations to Geneva in September 1955 when he set up two European subsidiaries—Lear S. A. in Switzerland and Lear Electronic GmbH in West Germany.

Pentagon committee appointed to coordinate the mass declassification of "dusty" documents has been informally labeled the "Moss-back" committee—a doubtful tribute to Rep. John E. Moss, Jr. (D-Calif.), chairman of House subcommittee that spotlighted the excessive Defense secrecy. Term "moss-back" might be better applied to stuffy Bureaucrats who withhold information for no sound reason, or just because they don't know what else to do about it.

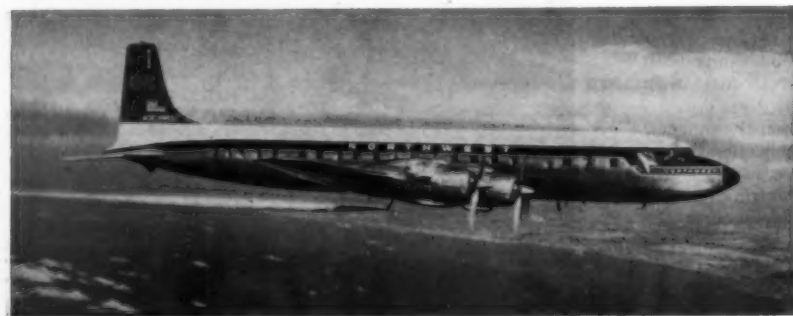
Beech Aircraft Corp. will develop both turbojet and turboprop business aircraft, according to chief design engineer John T. Calhoun. But says Calhoun, "we can't tell when."

Beech has looked over many designs, but cost factors are the deterrent. Depreciation cost is big problem—depreciation for an MS-760 four-place jet operating 600 hours a year, for example, would amount to 41% of total cost of operation.

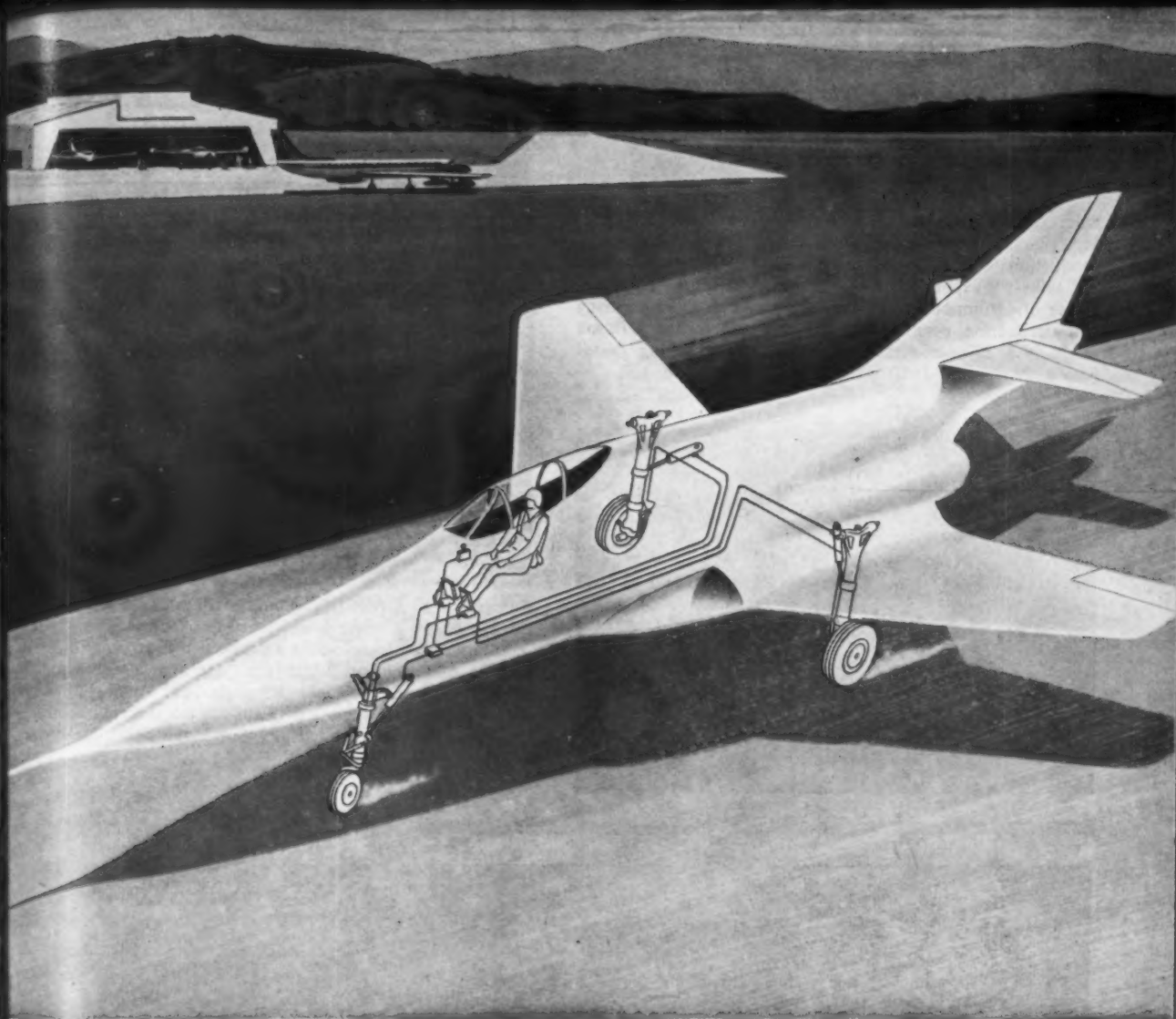
Big security problem at recent Institute of the Aeronautical Sciences "classified" visit to Palmdale, Calif. flight test center was retired USAF Gen. K. B. Wolfe, now asst. to chairman of The Garrett Corp. Flying in to IAS show with other industry VIPs, the former AF Deputy Chief of Staff-Materiel found himself without proper clearance!

In his AF post, Gen. Wolfe unquestionably knew and remembered more about the aircraft being demonstrated (F-102, F-104, F-105 and F-107) than most IAS members cleared for the show.

DC-7C dumps fuel in flight



UNUSUAL PHOTO taken by Douglas of Northwest Airlines DC-7C dumping fuel in pre-delivery testflight shows remarkably even pattern of fuel flow from dump chutes . . . or has photo been retouched. What's your guess?



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PEOPLE

Brig. Gen. Clyde H. Mitchell (right), who leaves his Air Materiel Command headquarters post of deputy director of production to head Rome (N.Y.) Air Force Depot August 15, talks "Weapon System" with Dick Hutton, chief engineer of Grumman, following recent speech to engineering and production personnel at Grumman-Bethpage. Hutton at 46 is a 27-year veteran with Grumman having joined firm in November 1930 when located at Baldwin, L.I.



Courtlandt S. Gross (right), president of Lockheed Aircraft Corp., accepts a silver anniversary gift from Lufthansa representatives on occasion of Lockheed's 25th year under its current management. Lufthansa's German predecessor pioneered transatlantic flights 25 years ago. Making presentation are Friedel Horstman, Lufthansa engineering representative in Burbank, and Hans Suessenguth, airline's chief engineer.



AVIATION DISTRIBUTORS AND MANUFACTURERS ASSN. honored 10 firms representing 125 years of service to the aviation industry at the recent ADMA convention in Colorado Springs. Those receiving plaques for their companies are shown with the 1957 ADMA president, J. Turner Moore, Jr., vp and group executive of Electric Auto-Lite Co. Standing, from left: Moore; Phil Heckler, Air Associates Div., Teterboro, N. J.; H. A. Eckles, Air Parts International, Burbank, Calif.; Eldon Byers, Standard Products, Inc., Wichita; G. P. Van Dusen, Van Dusen Aircraft Supplies, Minneapolis; G. R. Galipeau of Van Dusen, Teterboro. Seated, from left: J. L. Hainsworth, Central Aero Supply, Inc., Philadelphia; F. A. Twomey, vp-general manager, Air Associates Div.; Electronic Communications, Inc., Glendale, Calif.; D. R. McCann, Air Associates, Dallas; J. G. Hussey, Air Associates, Glendale; W. L. Carolla, Air Associates, Chicago.



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Richard B. Hubbard	VP and asst. to pres., Pacific Airmotive Corp.
Joseph W. Antonides	VP-solid propellant operations, Reaction Motors, Inc.
W. Thomas Stark	Gen. sales mgr., aviation products, Fairchild's Stratostats Div.
Capt. Grayson Merrill	Dir. engrg., Fairchild's Guided Missiles Div.
Brig. Gen. Alfred R. Maxwell (USAF, ret.)	VP, Hallam Electronics Co. div. of The Siegler Corp.
ADM. John B. Pearson, Jr. (USN, ret.)	Dir. development planning, North American Aviation, Inc.
Dallas W. Cederberg	Sales mgr. for Asia, Australia, Middle and Far East for Cessna
Albert R. Weldon	Exec. asst. to gen. mgr., Pratt & Whitney Aircraft—Florida
Joseph B. Moorman	Commercial sales mgr., General Electric's Production Engine Dept.
John P. Edwards	Sales mgr. Hetron polyesters, Hooker Electrochemical Co.
Robert Main	Mgr., electronics dept., United Aircraft Corp.
Richard L. Greene	Govt. contracts admin., Applied Science Corp. of Princeton
Walter B. Manson, Jr.	Asst. to the pres., Measurements Corp.
Edmund T. Price	Professor, human relations, California Western Univ.
Norman A. Maher	Adv. mgr., General Logistics
Kijlo Kishi	Chm. bd., Fuji Heavy Industries Ltd.
Robert C. Wright	Chief, production engrg., Pratt & Whitney Aircraft
Sterling B. Estes	Aircraft sales mgr., Field Aviation Co., Ltd.
L. D. Strom	Asst. chief engrg., Apparatus div., Texas Instruments Inc.
W. R. Hedeman, Jr.	Asst. chief engrg., Apparatus div., Texas Instruments Inc.
John Brophy	Sales coordinator, Aircraft Equipment Div., Consolidated Diesel Electric Corp.
C. W. Boyle	Sales mgr., Plasteel Div., Plasteel Products Corp.
E. B. Charles	Commercial sales mgr., Aero Design & Engrg. Co.
R. K. Hoffman	VP, Acme Precision Products, Inc.
Bennett D. Jones	Tech. dir., Aircraft Div., Standard Pressed Steel Co., Australian Agricultural Aircraft oper., Marsh Aviation, Inc.
John F. Neace	Sales mgr., Beaver Tool and Engrg. Corp.
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William P. Tyson	Mgr., Aircraft Div., Cobell Industries, Inc.
William M. Houk	Gen. sales mgr., Fischer & Porter Co.
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Kenneth Stiles	VP-public and industrial relations, Chase Brass & Copper Co.
Peter S. Barno	Mgr. aviation electrical systems engrg., GE's Aviation and Defense Industries sales dept.
John A. Lawrence	Dir. corporate planning, Marquardt Aircraft Co.
Harry Hone	Special asst. to coordinate Dagger and F-106 programs, Convair
W. W. Fox	

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Mgr. special products, military sales, American Bosch
Tech. dir., Navy's Polaris missile
Commander, Rome, N. Y., Air Force Depot
BuAer representative, Los Angeles
Founder, Inairco (Int'l air charter brokerage)
Captain, USN
On design change board, mktg. section
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Dir. research and devel., Stavitz Engrg., Inc.
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With McGraw-Edison Co.
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RCAF
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Mgr., Unbrako inside sales dept.
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Sales mgr., Eastern Div.
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EN ROUTE

by Wayne W. Parrish

WWP in Darwin: He wasn't on the manifest, but . . .

MY INTRODUCTION to Darwin, Australia, could hardly be classified as a World's Fair spectacular. If it had a moral it is simply that the prominence of a city's name on a world map is not necessarily an indication of its size and importance. When there isn't anything important on a land area, map-makers have to ink in something to take up the space. In the case of Darwin, there just wasn't anything else nearby so the map people inked in Darwin as though it ranked with Bombay, Tokyo and Chicago.

It was early morning. Hot and humid. There were low and very fast-moving dark clouds with strong winds and intermittent heavy rain. I finally cleared customs and took my bag into the terminal to the MacRobertson-Miller Airline counter. I was supposed to be checking in for my long DC-3 flight to Perth. But the counter was not only unlighted, it was bare of even a cardboard sign and it was dusty. Absolutely vacant and void of any activity in the past year.

Next counter was occupied by Qantas, so I stepped up meekly and said I had just arrived on the Qantas service and was to go to Perth and did they have any information. My inquiry brought forth a few puzzled gasps. The staff at Darwin had been alerted to my arrival but I was not listed on the Qantas manifest for reasons as yet unknown. They thought my plans had been changed. I dutifully replied that whether or not I was on the manifest was not nearly so important as the fact that I had been, in fact, a fully ticketed passenger. I had occupied a seat all the way from Hong Kong, and my baggage had been checked through and was at present in my hand.

One of those mysteries

One of the unexplained facts of life is how a passenger can be ticketed and his baggage weighed and checked, and he never gets on the manifest. It wasn't the first time this has happened to me. On a BEA flight London-Brussels not long ago I was not on the manifest and the people who were to meet me checked at the airport and departed because BEA insisted I wasn't on board when in fact I was not only there but wasted a half-day and an evening waiting in my hotel room to be called for.

I must say that the absence of my name on the Qantas manifest caused only a temporary crisis. After all, there I was and if somebody up the line had goofed nobody at Darwin was going to do more than shrug his shoulders about it.

Now about this MacRobertson-Miller flight to Perth, I asked. Well, seems that there was a terrific cyclonic disturbance over the whole northwest of Australia

and I was informed that I was lucky even to get as far as Darwin. Our plane had almost been turned back, and I might have landed in Borneo or Singapore. As for the DC-3 that flew the long distance from Perth to Darwin (about 1,900 miles) twice a week, no plane had been able to get through on the west coast for a week. My plane, which had been due at 3:50 p. m. the day before, was still stuck down the line at Wyndham or some other place; nobody was quite sure. Later when I found out that Wyndham was a great metropolis of 200 people I could well imagine why nobody could be sure.

Civilization at last

The Qantas people said they would keep checking and the DC-3 might be coming in sometime during the day. In the meantime why didn't I go up and have breakfast on the house, meaning Qantas. So I parked my bags and went upstairs to a very spacious and attractive dining room and lounge. And lo and behold, it was air-conditioned. Well, I thought, there are signs of civilization in Darwin, so why not live it up and have a good breakfast.

The breakfast wasn't bad, either, so after eating leisurely I explored the lounge and found it to be quite comfortable although there were no newspapers whatever, except an old one that a BOAC captain had grabbed. Wonder why nobody ever thinks airline passengers are interested in the news? The lounge was quite full of all sorts of passengers and I began finding out why.

Outside in the driving rain were three airplanes. I must say it was a rather pathetic sight. The Qantas plane on which I had arrived had developed some sort of trouble so it was delayed indefinitely. There was a BOAC Britannia, one of the first in service on the Sydney run, with some electrical troubles and it was to be stuck there about 36 hours. And there was a DC-4 of Trans-Australia Airlines stuck with an engine change. In the driving rain and humidity the ground crews were having a rough time. Nothing else was flying and from the looks of the weather nothing much else was going to arrive for awhile.

Back down at the Qantas counter there was no new word about a MacRobertson-Miller DC-3. I began to feel like a rather odd character because everybody seemed amazed that I would get off a through flight in order to go down the west coast in a DC-3. So I decided to shave and clean up in the facilities which Qantas installed for transients (Qantas also ran the dining room) and managed to find a reasonably dry towel and clean out a wash basin. The preced-

ing passengers had pretty well wrecked the facilities and the rain had come inside to put a nice covering of water over much of the area including all but one of the toilets. I've been in worse, but I've also been in much better. Anyway, I felt better after shaving.

Curiosity still alive

Now, says I, since I'm going to be around the place for a few hours, I might as well take a cab into Darwin and see the sights and have a cup of coffee at a local cafe and mail a few postcards. As a guy who has gotten around the world a little bit I can still be pretty naive at times. I was still thinking of the size of the lettering for Darwin on the world maps.

Again I meekly went to the Qantas counter to suggest that even though I hadn't been on the manifest, at least I was there in person and could they give me some advice and counsel, specifically how to get into town and what to see when I got in town. The last request was a lollapalooza that really threw the counter agent and he allowed as how he could get a taxi from in town all right but that it wouldn't take me very long to see the town. But if that's what I wanted to do, okay. So he calls a cab.

I kept looking out for the cab and after quite awhile it arrived and I dashed through the rain and got into the front seat of an old broken-down Dodge that must have been sitting nearby one of the Jap bombs that landed on Darwin in World War II. Instead of finding a real local native Aussie who could give me a lot of background of the area, the driver turned out to be a young Italian. He was a bloke from Rome and he had come to Australia to earn more money and he was about the most disillusioned bird I've run into in many a northern territory.

So for the five miles into Darwin I got an earful. Darwin was the worst spot in the whole country, he said. The Aussies are cold and inhospitable. Darwin has only 6,000 people, only one cinema. There's nothing to do, you can't make any money, the climate was terrible, and in answer to a question of what he was doing up there the Italian could only shrug his shoulders and blame it on fatalism.

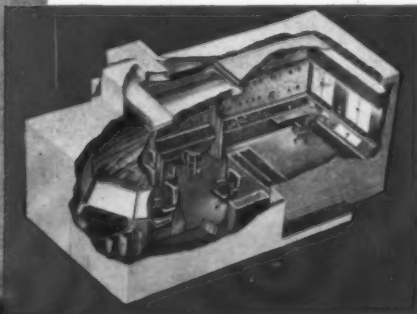
I told him to drive me on the most interesting route into the city so I could see the most, so he took me on the only road and down one of the only streets that amounted to anything, and let me out at the Hotel Darwin which was the only gathering spot of the metropolis. The difference between the Hotel Darwin and the rest of the town was that the hotel had two floors.

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